AMERICAN BEE JOURNAL

JUNE 1914

A SWISS BEEKEEPERS' CONVENTION

At the apiary of Mr. Belperrin, near Neuchatel, Aug. 17, 1913, mentioned in the Editor's "Notes from Abroad" in this number.

American Bee Journal

AMERICAN BEE JOURNAL

ESTABLISHED IN 1861 — OLDEST BEE PAPER IN AMERICA

PUBLISHED MONTHLY BY

American Bee Journal

1st Nat'l Bank Bldg. Hamilton, Illinois

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Please mention Am. Bee Journal when writing.

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Write us stating what you are in need of, and we will quote you. If you sell supplies our discount sheet is yours for the asking. Catalog on request.

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EQUIPMENT Store room built expressly for the business; large concrete basement with just enough moisture to prevent breakage in sections. No shrinkage in dovetailed corners of supers and hives.

QUALITY Root goods at factory prices. The kind that I have sold for nearly a quarter of a century, and the kind that you can afford to recommend to your neighbors. I might have increased my profits for a short time by handling other goods, but I would not have remained so long in business. Many articles in my catalog can reach you by Parcel Post, and I assume all responsibility in safe delivery of the goods. Catalog free.

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"Griggs Saves You Freight" **TOLEDO** **"Griggs Saves You Freight"**

With four carloads of new goods on hand, we are now better prepared for the rush than ever. But don't wait to be in the **RUSH.** Send your order in now and have the goods on hand, ready for use.

New Illustrated Catalog of 60 Pages

We want one in every beekeeper's hands.
Send postal for one today. It is free;

White Clover Extracted Honey Wanted, also Beeswax

in exchange for supplies. It will be to your interest to get in touch and keep in touch with us.

S. J. GRIGGS & CO.

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"Griggs is always on the Job."

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Untested Queens, 75c each; $8.00 per dozen; two or more dozen in one order, $7.50 per dozen
Tested Queens, $1.25 each; $12.00 per dozen.
Breeder Queens, $3.00 each. Foreign trade add 5 cents each extra.

½-lb. pound packages of bees after May 1, $2.00. Select queen wanted, add to this. The express charges on these will be very small in comparison with charges on frame nuclei.

One-frame Nuclei, with untested queen, $2.00 each; 2-frame, $3.00; 3-frame, $4.00. Full colony of bees in 10-frame hive, $7.00. Add 50 cents if Tested Queen is wanted; $2.00 if Breeder Queen is wanted. For ten or more colonies or nuclei, deduct 25 cents each.

I have successfully shipped bees and queens from this place every month of the year. I started two colonies Jan. 25 on their voyage to Nutsusarida, Kobe, Japan. Each contained a Breeder Italian Queen.

Dear Sir:—The two colonies of bees shipped by you arrived safely, and are perfectly satisfactory. M. SARIDA, Kobe, Japan.

My Bee and Queen exhibits at the State Fair of Texas were awarded six premiums in 1911. Italians also were awarded First Prize at the Cotton Palace in Waco, Tex.

"YOUR MONEY'S WORTH" is my motto. TERMS are *cash* with order. I refer you to Sabinal National Bank or any business firm in Sabinal.

I have ten yards, and with several hundred nuclei I can serve many customers. I solicit your trade.

J. A. Simmons, Uvalde Co. Apiaries, Sabinal, Texas

American Bee Journal

CEDAR WOOD

Hive bodies, 8 or 10 frame, 25c each. Covers and bottoms, prices upon application. Falcon Foundation and Bee Supplies.

FROFALCON QUEENS

Everything for the beekeeper. Address.

J. C. Frohliger, Berkeley, Calif.

Greater San Francisco

Please mention Am. Bee Journal when writing.

BARNES' Foot-Power Machinery

Read what J. I. PARENT, of Charlton, N. Y., says: "We cut with one of your Combined Machines, last winter. 50 chaff hives with 7-in. cap, 100 honey-racks, 500 brood-frames, 2,000 honey-boxes, and a great deal of other work. This winter we have double the amount of bee-hives, etc., to make, and we expect to do it with this Saw. It will do all you say it will." Catalog and price-list free.

Address, W. F. & JOHN BARNES
996 Ruby St., Rockford, Ill.

Please mention Am. Bee Journal when writing.

Try My Famous Queens
From Improved Stock.

The best that money can buy; not inclined to swarm, and as for honey gatherers they have few equals.

3-Band, Golden, 5-Band and Carniolan

bred in separate yards, ready March 20. Untested, one, $1; six, $5; 12, $9; 25, $17.50; 50, $34; 100, $65. Tested, one, $1.50; six, $8; 12, $15. Breeders of either strain, $5. Nuclei with untested queen, one-frame, $2.50; six one-frame, $15; two-frame $3.50; six two-frame $20.40; nuclei with tested queen, one-frame, $3.00; six one-frame, $17.40; two-frame, $4; six two-frame $23.40. Our Queens and Drones are all reared from the best select queens, which should be so with drones as well as queens. No disease of any kind in this country. Safe arrival, satisfaction, and prompt service guaranteed.

D. E. BROTHERS, Attalla, Ala.

P-O-R-T-E-R

(Trade mark.)

BEE-ESCAPE

SAVES { HONEY / TIME / MONEY } AT ALL DEALERS

Each, 15c; Doz., $1.65, postpaid

If your Dealer does not keep them, order from Factory, with complete instructions.

R. & E. C. PORTER, MFRS.,
Lewistown, Illinois

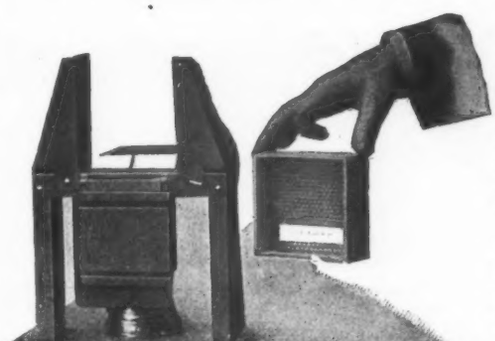
BEEKEEPERS' SUPPLIES

Such as Winter-cases, Sections, brood-frames of every description, Section holders, Comb Foundation, Supers. Hive-bodies, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Box 209, Sheboygan, Wis.

WOODMAN'S SECTION FIXER



A new machine of pressed-steel construction for folding sections and putting in top and bottom starters at all one handling.

With top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop this season by this method.

The Editor of the Beekeepers' Review, in commenting on things at the recent Detroit, Michigan, beekeepers' convention, stated: "It was the consensus of opinion of those that saw the machine work, that it was the best thing for the purpose ever brought on to the market."

The Chicago-Northwestern Beekeepers' Convention in December unanimously adopted the following resolutions:

WHEREAS, This convention has been impressed by the exhibit of the Woodman Combined Section Press and Foundation Fastener, and believe that the same is practical and a labor saver for the beekeepers at large. Therefore, be it

Resolved, That the Chicago-Northwestern Beekeepers' Association in convention assembled, do heartily endorse the above device as a practical machine for the beekeepers producing comb honey.

I. E. PYLES,
ARTHUR STANLEY.
W. B. BLUME.

It makes no difference how many or what kind of fasteners you have, we want you to try this one. Your money back if you are not satisfied that it is the best on the market. Send for special circular, showing 10 illustrations. Immediate shipment of all goods. 40-page catalog.

Price, with one form, 4x5 or 4 1-4x4 1-4, $2.50. Extra form, 15c. Daisy Lamp, 25c. Weight of outfit, 4 pounds. Postage extra.

A. G. Woodman Co., Grand Rapids, Michigan

The New Bingham Bee-Smoker

the all important tool of the most extensive honey-producers of the world. This illustration shows the remarkable steel-fire grate which such men as Mr. France, Mr. Rauchfuss, the Dadants and others say is the **best** on the market. The Smoke Engine grate has 381 holes for the air and draft, equal to an opening 2 inches square. Buy the large sizes and be pleased. For sale at your dealers or direct. Weight each.

Smoke Engine	4-inch stove....	1¾ lbs.	$1.25
Doctor	3½-inch stove..	1⅝ "	.85
Two larger sizes in copper, extra		"	.50
Conqueror	3-inch stove.....	1½ "	.75
Little Wonder	2½-inch stove...	1 "	.50

Two largest sizes with hinged cover.

A. G. WOODMAN COMPANY,
Grand Rapids, Michigan

Root's Goods in Michigan

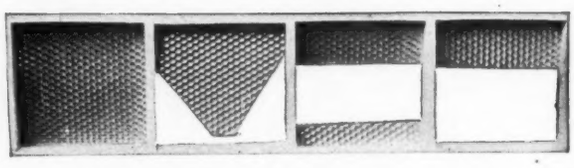
Our Specialty — The "Root Quality" Bee Supplies to Michigan Beekeepers Prompt Service in Shipping. We sell at factory prices. Beeswax Wanted Send for 1914 Catalog showing our Parcel Post Service.

M. H. Hunt & Son, Dept. A, Lansing, Mich.

American Bee Journal

"Falcon" Hives, Supplies and Foundation

Everything for the BEEKEEPER



"Falcon" Foundation made in the "Falcon" plant at Falconer, N. Y.

SUPPLIES FOR 1914—Take inventory of supplies now and figure what you will need for a slim season. Get them ready at odd times in the winter; and if there is a good season you will have ample time to re-order in April and get them for use. We like to make 'Inventory Sales" of **"Falcon"** supplies, for we know that we are dealing with an up-to-date beekeeper.

INVESTMENT—What is the investment of an extra $25.00 in supplies to the loss of 500 pounds of honey? Resolve to change for 1914, and buy **"Falcon"** supplies now.

EARLY-ORDER DISCOUNT—For **"Falcon"** hives and supplies bought now we give an early-order cash discount equal to 12 percent per year. You see it pays for a strictly money basis. Write for early-order discounts, and send list of wants for quotation.

"FALCON" QUALITY—In making our beehives, all of our waste lumber is made into cheap toy building-blocks, so that we are able to put better material in our hives and goods. Get a trial lot this fall so that you can see for yourself, and still have time to order 1914 supplies.

FREE SAMPLES of our famous **"Falcon"** foundation, made in our factory at Falconer, N. Y., cheerfully sent postpaid with copy of catalog, and name of nearest dealer if desired.

FACTORY W. T. FALCONER MFG. CO., - Falconer, N. Y., U. S. A

Where the good bee-hives come from

FLAX BOARD

Flax Board is now used by thousands of beekeepers East and West. We have in our office hundreds of unsolicited letters from some of the largest and most progressive beekeepers in the United States, saying that it is just the thing that they have been looking for for many years, and that they are putting in on every hive in their apiary.

The cost of Flax Board is small. It undoubtedly will pay for itself many times every season. You, of course, know that you must protect your bees against the cold in spring if you want to rear brood for the early honey crop. You also know that most of the heat escapes at the top of your hive while the cold comes in at the bottom. With the use of Flax Board, however, you can entirely overcome this.

We will gladly send you a small sample free if you will write for it

One-half inch thick Flax Board to fit top of hive:

Size.	Price.	Weight.
8-frame	$ .10 each	1¼ lbs.
10-frame	.11 "	1½ "

Order a lot. Try them on some of your hives and compare the difference.

MINNESOTA BEE SUPPLY CO. **100 Nicollet Island Minneapolis, Minn.**

Manufacturers of Dovetailed Hives, Sections, and Shipping Cases.

Gray Caucasians
Best Bee for Everybody

Glass Honey Dishes
The Handiest Dish in the Home

Cambined Bee-brush and Hive Tool
A Great Tool for the Bee Yard

Ant Dope
Guaranteed to Rid Everything of Ants

Prices sent free. Write to-day.

A. D. D. Wood
Box 61, Lansing, Michigan

We Make a Specialty of Manufacturing
SECTIONS
They are the Finest in the Land—None Better.

Our Prices will make you smile. We want to mail OUR BEE-SUPPLY CATALOG to every bee-keeper in the land. It is FREE. Ask for it.

H. S. Duby. St. Anne, Ill., carries a full line of Our Goods, and sells them at our regular catalog prices.

AUG. LOTZ & CO.
Boyd, Wis.

SUPERIOR
GOLDEN QUEENS

Untested, $1.00; 6, $5.00; 12, $9. Select Untested, $1.25; 6, $6, 12, $10. Prices on application for tested and untested queens by the hundred. Address,

T. S. HALL, Talking Rock, Ga.

Am Now Shipping Untested Queens from My CELEBRATED PEDIGREED STRAIN!

My bees are the product of many years of breeding by both Swarthmore and Henry Alley. Both names stand out like beacon lights among our past and present breeders, for the best queens ever produced in the United States. Never had foul brood.

SWARTHMORE APIARIES, - Swarthmore, Pa.

TAYLOR'S 1914 THREE-BANDED
Italian Queens

Now ready by mail; 26 years' careful breeding for the best honey-gatherers. None better. Prolific, and honey-getters. We fill all orders promptly. Untested, $1.00 each, or $10 a dozen. Tested, $1.25 each, or $12 a dozen. Select tested, $1.50 each, or $15 a dozen. Breeders, the best, $5.00. Send all orders to

J. W. Taylor & Son, Beeville, Bee Co., Tex.

Queens of Quality

3-band leather color. Unt., 60c each; $7.00 per doz. Sel. Unt., 75c each; $8.00 per doz. Circular free. **J. I. BANKS, Liberty, Tenn**

American Bee Journal

The Double-Walled Massie Bee-Hive

THE MASSIE HIVE
For Comb or Extracted Honey

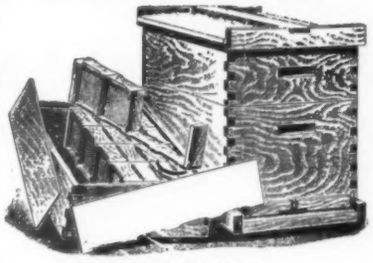
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood

THE MASSIE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance of swarming, and giving renewed energy to the bees.

Fifty years in the bee supply business has shown us that the **MASSIE** is **the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive.

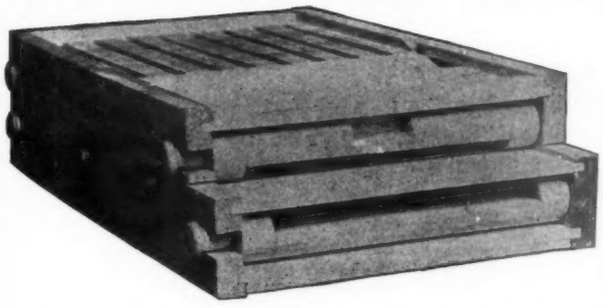
WHY NOT GIVE US A TRIAL ORDER? **SATISFACTION FULLY GUARANTEED**

We are also extensive manufacturers of **Dovetailed Hives** and **all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We issue a 72-page illustrated catalog which will be mailed to any one upon request.

KRETCHMER MFG. CO., COUNCIL BLUFFS, IOWA

FEATURES OF ADVANTAGE OF THE

ROLLER ENTRANCE BOTTOM BOARD



1. It allows feeding during any time of the day or year—at mid-day or in mid-winter.
2. It controls the mating of the queen so that mismating is prevented.
3. It settles the robber bee question as the roller can be quickly turned to bring the small entrance into position.
4. It sifts automatically undesirable drones out of the hive, and cages them in the drone trap.
5. It permits ample ventilation at the height of the honey-flow.
6. It can be instantly closed when moving bees in and out of cellars or from one yard to another.
7. It permits undesirable queens to be sifted out by screening the bees through the wire entrance.
8. It prevents swarms from going to the tops of trees or away to the woods when the beekeeper is away.
9. It practically eliminates swarming, as the colonies usually show no inclination to swarm. Why, I do not know.
10. It is adjustable to make a shallow bottom for summer and a deep one for winter.

It contains many other valuable features which will be apparent to any beekeeper upon investigation, and if it is once tried it will always be used.

8-frame size, $2.00; 10-frame size, $2.50. Italian Queens, Breeders, $10 to $25.

Nothing sold under $10.

CHAS. G. SCHAMU

INVENTOR AND MANUFACTURER **Box 48, LIVERPOOL, NEW YORK**

TENNESSEE-BRED QUEENS

42 years' experience in queen-rearing—Breed 3-band Italians only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested.....	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested.....	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Capacity of yard 5000 queens a year—Select Queen tested for breeding, $5

The very best Queen tested for breeding, $10. 300 fall reared tested Queens ready to mail, $2.50 to $10 each.

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

John M. Davis, Spring Hill, Tenn.

NEW ENGLAND BEE KEEPERS

Everything in Supplies
New Goods. Factory Prices
Save Freight and Express Charges
CULL & WILLIAMS CO.
Providence, R. I.

WESTERN BEE-KEEPERS can save honey and get the best goods obtainable, especially made to meet Western condition. Send for new catalog and special price list to

Colorado Honey-Producers' Association
Denver, Colorado

W.H.Laws

Will be ready to take care of your queen orders, whether large or small, the coming season. Twenty-five years of careful breeding brings Laws' queens above the usual standard; better let us book your orders now.

Tested queens in March; untested, after April 1st. About 50 first-class breeding-queens ready at any date.

PRICES: Tested, $1.25; 5 for $5.00; Breeders, each $5.00. Address

W. H. Laws, Beeville, Texas.

BEEKEEPERS' SUPPLIES

Write us for our 64-page catalog, **Free.** Full information given to all inquiries. Let us hear from you. We handle the best of bee-supplies for the beekeeper. Our shipping facilities are good. We cater to parcel post and express orders—none too small nor too large. Beeswax exchanged for supplies or cash. **John Nebel & Son Supply Co., High Hill, Missouri**

QUICK SHIPMENT OF QUEENS

of 3-band stock reared for honey-gathering qualities
Untested, June, $1.00. Later, 75c
Tested, $1.50. Select tested, $2.
Send your orders now and be assured of having queens when you want them. **R. A. SHULTS, Cosby, Tenn.**

The One Subject on Which all Beekeepers Can Agree

Lewis Sections!

There are many subjects on which no two beekeepers can agree; but here is one they can agree on. They all acknowledge that Lewis Sections are the best to be had—that they excel in quality and workmanship—and when you say Quality and Workmanship, you have said all there is to be said about a honey section.

Let us take you with us through the different operations and show you how Lewis Sections are really made.

First the material, which is the best Wisconsin white basswood that can be obtained, is bought by an experienced buyer by the carloads—millions of feet of it. It arrives at the Lewis factory in the board and is sorted as carefully as a woman picks over strawberries.

The best boards are then sent on their buzzing journey through the factory—fed through a planer watched over by a veteran in the business—sawed up into correct thicknesses and lengths and run through a polisher, the sandpaper polishing both ways of the grain.

Then the particular work commences. Here is where the intricate machinery gets the strips, rabbets them, scores them, dovetails them, and then the finished sections are packed away. But the secret is here: This delicate machinery is cared for like a trotting horse—the Lewis section foreman has been watching it, caring for it, keeping it right for the past thirty years.

He is Still on the Job Making Lewis Sections for You

No matter what Hives, what Frames, what Supers, and whatnot you use.

Insist on Lewis Sections

Every crate going out with the Lewis name means something to you. Here is what one of our customers has just written us:

> "We have been using the G. B. Lewis Company's No. 1 Sections for several years, and have a **few** other makes, but I find the Lewis goods the best. We have put up about 30,000 sections so far this season, and have not found one section in the lot that was not perfect. We find they fold perfectly and hold together where some of the other makes come apart. We use the Rauchfuss Combined Section Press and Foundation Fastener and Dadant's Foundation."

G. B. Lewis Company, Watertown, Wisconsin

Sole Manufacturers

Thirty Distributing Houses.

Send for the name of the one nearest to you.

(Entered as second-class matter at the Post-office at Hamilton, Ill., under Act of March 3, 1879.)

Published Monthly at $1.00 a Year, by American Bee Journal, First National Bank Building

C. P. DADANT, Editor.
DR. C. C. MILLER, Associate Editor.

HAMILTON, ILL., JUNE, 1914 **Vol. LIV.—No. 6**

EDITORIAL COMMENTS

Wisconsin Inspector Report

We are in receipt of the 16th annual report of the State Inspector of Apiaries of Wisconsin. Mr. N. E. France shows 285 apiaries inspected containing 9070 colonies. Of these 3117 colonies were diseased in 151 apiaries.

Another great advantage derived from the inspection management in Wisconsin, is the information bureau for beekeepers wanting to either buy or sell bees, queens, honey or bee-supplies. Every State might have such a bureau of information. Mr. France is doing splendid work for the beekeepers of Wisconsin.

Dr. McIndoo on the Organs of Smell

All who care to be informed as to the natural history of the honey-bee—and every beekeeper should be of that number—will be interested in Dr. McIndoo's investigations regarding the smelling organs of the honey-bee. His conclusions, however, are so radically different from anything passing current heretofore, that they are not likely to find ready acceptance. Something like this is likely to be said: "That's all very interesting, but not at all convincing. As stated in the article, 'Both scientists and beekeepers are now generally agreed that the honey-bee has an acute sense of smell, and that its olfactory organs are located in the antennæ.' Is the generally accepted belief to be lightly set aside without the fullest proof? Dr. McIndoo objects that 'all the antennal organs are covered with a hard membrane through which odors must pass in order to stimulate these organs.' But one gets a rather different impression in reading Cheshire, Vol. I, page 109, when the 'smell hollows' of the antennæ are mentioned as 'covered by a thin layer lying over a goblet-formed cavity beneath, into which passes a nerve-end cell.' The idea that the bee smells with its sting, an organ nearly always inside the bee, seems a little like a man smelling with his liver. We know the queen is accepted or rejected according to its smell, and when a bee is smelling at a queen, or at other bees, we can see it use its antennæ."

However, although it is the general belief that the organs of smell are in the antennæ, it never has been considered a matter of certainty. Cheshire, on the page already quoted, speaks of certain parts of the antennæ as "almost certainly olfactory." That "almost" means that we are still on the lookout to learn whether the organs of smell are in the antennæ or elsewhere, and if elsewhere, where? Dr. McIndoo says he has discovered the true organs of smell, and says it with positiveness. No doubt some will ask, "Who is this man, that we should believe such a startling statement from him?" Mr. McIndoo is one of that small band of earnest investigators that Dr. E. F. Phillips has gathered about him at Washington. That position entitles to serious consideration any statement he may make, and it becomes us to have at least an open mind, watching in the meantime [illegible] treat his views. See his article in this number.

Alfalfa Seed Produced Without the Help of Bees

We are in receipt, from the Department of Agriculture, of a circular letter explaining how seed may be produced in alfalfa without the help of bees, by the artificial or accidental "tripping" of the flower. This is the "snapping back of a part of the flower to deposit pollen on the stigma."

However, the cross mating of flowers by the fertilization of one blossom with the pollen of another cannot take place without the action of bees. It appears from this letter that the honey-bee is less efficient in this than some of the wild bees. But as the honey-bees are more numerous than the others, where they exist at all, it necessarily follows that the most flowers are fertilized through their agency. Cross fertilization ensures seed production in about twice as many instances as when the flower is fertilized by its own pollen.

The reader will find in this number an article from the pen of our learned correspondent, Mr. John H. Lovell, with illustrations, showing a few of the numerous kinds of bees in existence on the American continent. Pollen-gathering bees are to be found even in the northern mountains, where the summer is less than three months duration. Nature evidently provides well for the needs of all its productions. But where flowers are grown artificially in immense fields, as with our alfalfa-covered plains, an artificial production of pollen-gathering insects is necessary, and our honey-bee proves its usefulness.

Bulletin No. 75, of the Department of Agriculture, entitled, "Alfalfa Seed

American Bee Journal

Production; Pollination Studies," will be of interest to those of our readers who are scientifically inclined on this subject.

Temperature of the Cluster in Winter

Builetin No. 93, of the Department of Agriculture upon the above subject, is a report of special studies made by our well-known and able friend, Dr. E. F. Phillips, in charge of bee-culture investigations, and his assistant, Mr. Geo. S. Demuth. The wintering problem was their aim, both indoors and outdoors. A number of colonies were studied and kept under close control with thermometers within the cluster, and in different parts of the hive. Electrical thermometers were used, by means of which readings could be made without approaching the hives, thus avoiding disturbing the bees.

The bulletin contains 16 pages, and may be had from the Department of Agriculture in the usual way. We will make a few quotations from it.

It was formerly admitted, without proof, that the temperature of the cluster in the hive, was at all times about that of human blood. But it appears that it may be much lower. The bulletin says:

"When a colony is without brood, if the bees do not fly and are not disturbed, and if the temperature does not go too high, the bees generate practically no heat until the coolest point among the bees reaches a temperature of about 57 degrees F. At temperatures above 57 degrees a compact cluster is not formed, but the bees are widely distributed over the combs. At the lower critical temperature, which is for the present stated as 57 degrees, the bees begin to form a compact cluster, and if the temperature of the air surrounding them continues to drop they begin to generate heat within the cluster. * * * At the temperature at which other insects become less active (begin hibernation) the honey-bee becomes more active and generates heat; in some cases until the temperature within the cluster is as high as that of the brood-nest in summer. * * * These conditions do not apply when the colony has brood. The rearing of brood in winter causes a marked increase in heat production." * * *

It is therefore apparent that in low temperatures the bees feel the necessity of heat production.

A diagram given of temperatures taken in cellar wintering shows that in a room kept at temperatures varying between 38 and 44 degrees, the temperature of the cluster varied between 64 and 88 degrees in one hive and between 71 and 91 degrees in another.

A number of interesting remarks were made, some of which confirm facts which practical beekeepers have noticed. For instance, when a hive is opened in cold weather, the bees are found to form a compact cluster. But those on the outside of the cluster are less active than those in the interior of the cluster.

"When a comb from the center of the cluster was shaken, the active bees in the center of the circle dropped off readily, and those in the outer shell which were somewhat sluggish were removed with more difficulty. * * Evidently the bees in the shell, whether in the cells or between the combs, are less active than those in the interior of the cluster."

Also it was noticed that "bees fan to heat the cluster in winter as well as to cool the hive in summer. Observations of this kind were repeated beyond number, and this theory of the method of heat production is entirely supported by the repeated observation of a humming noise from the cluster during the cold weather." Like human beings, they stir more or less to keep warm.

This study is very interesting, but as Dr. Phillips states: "Too hasty conclusions must not be drawn from the facts here presented."

One point is not mentioned which we think is of importance, it is the comparative strength of colonies experimented upon. We have often seen colonies so powerful that they were ready to emerge from the hive at the least disturbance in the coldest weather. Such colonies must generate greater heat than weaker ones, or must sustain it more evenly. We would suggest comparative studies (if not already made) of the largest and strongest colonies with medium and weak ones, both indoors and outdoors.

As this is but the beginning of the scientific study of the winter problem, we may expect tangible and very useful results in the near future, if the Department of Agriculture continues the employment of capable and steady workers who will persist in accomplishing tasks like this. The wintering problem is a constant menace to the beekeepers of the North. It needs to be thoroughly studied.

Good Advice for Michigan

Mr. F. E. Millen, State Apiarist and Inspector from Michigan, has a very good article in the April 25 number of the Michigan Farmer on "Spring Work in the Apiary." Unlike many aricles which appear from time to time in farm papers, this article does not try to emphasize how to keep a pocketful of dollars by big crops of honey. Mr. Millen gives some practical advice applicable to such conditions as a beekeeper is apt to meet in spring just before the crop is on.

One point made, and one which is often misunderstood by the smaller beekeeper especially, is that the clipping of queens' wings does not have anything to do with *prevention of swarming;* it simply keeps the swarms from absconding after they have issued, owing to the fact that the old queen is unable to follow.

MISCELLANEOUS NEWS ITEMS

Cyprian Queens.—Unfortunately we have misplaced our list of subscribers desiring to obtain Cyprian queens. Those interested should write to W. B. Davis, of Aurora, Ill. He has some pure stock.

Large Crop for Russia.—In the Russian Beekeepers' Review, Mr. Kormilcev, of Powelen, reports 688 pounds of honey from one colony in 1913, in an American hive.

Education by Cinematograph.—Educating the people concerning bees by the moving picture show is one of the growing methods. At the French Agricultural Exhibit in Paris, in January, they showed agricultural scenes. such as plowing, harvesting, etc.; they also exhibited insects in their changes from eggs to larvæ and thence to winged insects. They also showed the transferring of bees from the common skep to the movable-frame hive, swarm harvesting, queen laying, honey extraction, etc.

The picture show, which is so often used for sensational exhibits, may thus be put to excellent use for the education of the masses.

Oldest Living Member of the National Association.—On the first page of the May issue, Dr. Miller asks if there isn't some mistake in reckoning concerning who is the oldest member of the National Association. The Editor had given 81 years as my age, which is correct. But he should have stated that I was the oldest living member in attendance at the first National con-

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vention of beekeepers ever held in America, which met in Indianapolis, Ind., during the winter of 1871.

In case Dr. Miller was at that convention and is 83 years old, he will pass, but not otherwise. Mr. M. M. Baldridge, of St. Charles, Ill., was at the convention, and I think is still living, but I do not think that he is as old as myself.

G. BOHRER, M. D., Chase, Kan.

Save Your Beeswax Refuse.—Beeswax is high in price now, some producers have been offered in the neighborhood of 35 cents per pound for their accumulations. It behooves the beekeeper to save every scrap that may be turned into beeswax. While on the rounds of our apiaries one hive was found in which the combs had been completely demolished by the moths last fall, after they were thought to be safe. It seemed plausible that this sediment left by the moths ought to contain at least a small percentage of beeswax. The black looking dirt was gathered up and carried home to be run through a Hershiser wax press as a trial.

From what had been 10 full combs, Dadant size, was extracted 14 ounces of beeswax. This, too, in view of the fact that the lot made so small a batch that not a little proportion of the wax must have been left in the burlap packing when pressing.

Do not let the moths destroy your combs by any means, but if they do destroy them, do not throw away the residue as unfit for any use. Save it together with bits of bur comb, and render it together with your other slumgum, or, if you prefer, send it to some of the supply men who make a business of rendering old combs and slumgum into wax.

A good way to preserve old and crooked combs from moth until you have leisure time to render them is to keep them covered with water in a tub or barrel.

Development of Apiculture.—Russian apiculture progressed last year, the production of honey being above the average. The year was an unusual one in many respects; the spring was early, warm weather setting in as early as March, and many beekeepers brought out the hives from their winter abodes. At the end of March the first honey appeared. However, the warm weather was not of long duration; after the middle of April a wave of cold spread over Russia. In the southern regions this happened during the flowering period of the fruit and destroyed buds and blossoms. The cold weather lasted for some time, and May, which is usually the chief month of the bees' activity, proved unsatisfactory, the bees not resuming work until June. In well kept apiaries, where the bees were provided with warm hives and sufficient food, they did not suffer much from this delay, but in the ordinary apiaries of the peasants a great number perished of hunger and cold; and those that survived were able to collect later in the season only the necessary winter supply of honey. A great improvement was noted in June in the central, eastern, and southern provinces of Eupean Russia, where white clover, buckwheat, sunflowers, and many other plants furnished a large supply of food.

In the western territories the weather continued cold and wet through June. In the wooded districts, where the production of honey depended upon the flowering of trees and shrubs, the outcome of the season was poor. For instance, the honey obtained from lime trees, which is preferred to other kinds by the consumers, and is produced in large quantities in the province of Nizhni-Novgorod, was very scarce last year. On the other hand, apiaries situated in the open country and the steppes showed a large yield.

Good results were obtained from the following provinces of central Russia: Kostroma, Vladimir, Moscow, Ryazan, Tamboff, Penza, and part of Tula; and in the following northern and eastern provinces: Vyatka, Perm, Ufa, Nizhni-Novgorod, Simbirsk, and Kazan.

Detailed statistical data have been obtained from the instructor appointed by the Department of Agriculture in the province of Kostroma. In this province there are 100,000 hives, and the yield of honey has been good, averaging 41 pounds per hive; the yield of wax averaged 0.7 pound per hive. In several rare instances as much as 433 pounds of honey were obtained from one hive. The average prices were 15 cents per pound of honey and 37 cents per pound of wax. The total revenue from apiculture in Kostroma for 1913 amounted to more than $500,000.

A satisfactory yield was obtained in the provinces of Kovno, Grodno, Smolensk, St. Petersburg, and Pskov, and an average yield in Volhynia, Podolia, Samara, Saratof, and Tver; but in both regions the production was inferior to that of the previous year. These territories show a great variety of prices, depending upon the facilities for marketing the product. Results were unsatisfactory in Poland, Vitebsk, Vilna, and Orel, where in many apiaries the honey produced hardly sufficed for keeping the bees through the winter.

Last year again demonstrated the lack of organization in the marketing of honey, and the dependence of the beekeepers on the wholesale purchasers who often make a profit of 200 to 300 percent.

Serious drawbacks to apiculture were the prevalence of sickness among the bees brought on by the unfavorable weather and the beekeepers' ignorance of modern methods. Apiculture is developing every year, and the need of instruction in scientific beekeeping is recognized by most of the producers. The Government has been asked to provide such instruction.

Necrology.—Died, at Paris, March 30, at the age of 74, Mr. E. P. Caillas, vice-president of the Central French Beekeepers' Association. He was secretary of the International Congress of Beekeepers at the Paris Exposition of 1900. Mr. Alin Caillas, the chemist, is his son.

Meeting of Iowa Beekeepers at Delmar.—The meeting at Delmar, July 7, will be held at the Coverdale farm. Mr. Coverdale has become famous as a grower of sweet clover, and is considered authority on the subject. He has experimental plots showing what sweet clover will do when handled scientifically. Mr. Coverdale will deliver an address explaining what sweet clover will do for the farmer and stock raiser. Any one contemplating sowing sweet clover can well afford to make a trip across the State to hear Mr. Coverdale, and see his experimental plots as well as his large acreage.

Mr. C. P. Dadant will probably attend and deliver an address. He has been asked to choose his own subject.

Mr. Frank C. Pellett, Iowa's State bee-inspector, will also speak on foulbrood conditions in Iowa, foulbrood laws, etc. Mr. Pellett is a lecturer of note, and is president of our State Association and a live wire. He isn't very large, but you will know he is at the meeting all right. Other subjects will be discussed informally, but the three addresses will be well worth your time.

Don't forget the basket dinner.

Let everybody come whether a beekeeper or not. Let us all boost for the Delmar meeting. W. S. PANGBURN.

Cool, Cloudy Weather.—The following note from California is self-explanatory as to conditions there:

Orange bloom passed with a very small amount stored compared to former years. Black sage is yielding, but the flow is very slow. Cool, cloudy weather is the rule, and only occasionally a day when bees will not rob when extracting. Expect one-third to one-half of a crop. White sage is beginning to bloom. L. L. ANDREWS.

Corona, Calif., May 15.

Beekeeping in Germany.—At the end of 1912 there were counted 2,619,891 bee-hives in Germany, over half of these being in Prussia. Silesia leads the Prussian provinces with 187,264, and all of the non-Prussian States, only Bavaria has more (over 400,000). The province of Posen counted 122,705.

The Silesian Chamber of Agriculture is given a fund to promote bee-culture, which it uses according to plans proposed by the General Association of Silesian apiculturists. The association is composed of 163 societies with a total membership of 7300. The provincial exhibition was held last year at Hirschberg. The chief instruction course was given in a Breslau suburb, and auxiliary courses at Trachenberg and Richtersdorf. Seventeen observation stations were in operation during the year. The chamber also advises in legal matters, assists in marketing honey, and maintains a library of books on bee-culture. A trial honey market

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was held in connection with the fruit market in Breslau from Nov. 12 to 14, and good sales resulted. Nearly all the societies used the privilege of tax-free sugar for winter feeding. While the highest honey production of a colony was 24.9 pounds, there was a considerable variation in the colonies, the lowest result being 4.19 pounds. The average was 12.1 pounds against 15.4 pounds the year before.

The widespread attention given to apiculture makes this district a good market for beekeepers' supplies. A list of special dealers in various cities of Silesia and Posen is forwarded [and may be obtained from the Bureau of Foreign and Domestic Commerce]. The list also contains the addresses of the six members of the Silesian Chamber of Agriculture that constitute the standing committee on apiculture, poultry breeding, etc., who would probably be interested in catalogs of American firms.

Unfortunately it is difficult to get business from circulating printed matter in English, and the consulate is unable to predict results when this is relied upon. If manufacturers will inform the consulate to what extent they are prepared to go after the trade and what methods they have hitherto used in foreign business, more detailed suggestions will be cheerfully furnished.—*Daily Consular and Trade Report.*

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Encouraging the Use of Honey in Cooking

I thank you for your prize of the American Bee Journal I received at the Northern Michigan State convention. We had a nice time. I also received a prize on my honey candy. In my display I had both comb and extracted honey, honey candy, honey cake, a mince pie sweetened with honey, and honey fried cakes. I think if the beekeepers' wives would go to the conventions and take some of the good things that can be made with honey with them, and then do as we did, cut them up and pass them to the visitors, we would have more call for honey. [MRS.] JOS. BURKHOLDER.

Mancelona, Mich.

Your idea of having beekeepers' wives display their honey and the toothsome things made with it at conventions is good. Such a display will stir up other beekeepers' wives and daughters, and then if they in turn can be induced to offer such displays at State and county fairs where the mass of the people can be reached, larger results may be obtained.

Ventilating Comb-Honey Supers

Referring to what is said on page 83, Harry Bell writes that what was said on page 30, was based on actual experience and not on supposition. He says:

"We know our colonies in double-walled hives and double walls around the comb-honey supers with the ⅜-inch entrance have given us the best results. It may be all right to ventilate in your locality, but it would not work here in the production of comb honey."

"Put-Up" Hives

A correspondent who has read "Fifty Years Among the Bees," and has also read what is said about "put-up" hives on page 121 of this journal, is puzzled to know how bees get out of the upper, or "put-up," hive, seeing there is no communication between the two hives His trouble probably comes from not making the proper distinction between "hive" and "hive-body." and he has made the mistake of supposing that a hive-body is put up instead of a hive. When a hive is mentioned, its bottom-board is generally supposed to be with it, and if the bottom-board be taken away the hive-body is left. As here stated, each hive has its own bottom-board.

The accompanying outline sketch shows a hive with its supers, and a "put-up" hive over all.

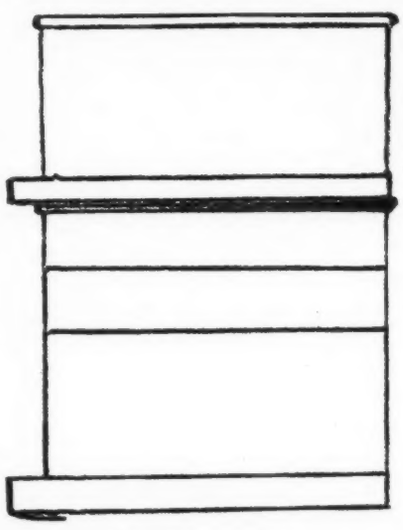
Variation of "Put-Up" Plan

On page 121, something was said in this department about what we did last year in the way of treating colonies that swarmed or were likely to swarm, saying that we followed the plans laid down in "Fifty Years Among the Bees," generally the put-up plan, which is given on page 167. Referring to this, a Pennsylvania correspondent says he has looked it up in the book and does not comprehend it. He seems to think that he must go from page 167 to 168, 184, 186, and 189, and says: "Now I would be pleased to see this plan set forth in one body of statement from A to Z." Then he says he is against finding queens, and does not want to have clipped queens, and that when on page 167 the return of queens is mentioned that seems to presuppose clipped queens.

All of which leaves one a bit dazed as to how to meet the case. Our Pennsylvania friend plainly understands the plan to involve the finding of queens and the clipping of queens, but wants the plan to be given in detail. What good to give the plan if he rejects two of the important factors? Sounds like saying, "I've decided I'll not follow the plan, but I want you to give it all very clearly in detail."

Let us, however, do what may be done to straighten matters out. In the first place, if Pennsylvania will again turn to page 167, and read straight through to the end of the first paragraph on page 170, he will find the plan "set forth in one body of statement from A to Z." To be sure, the matter is referred to again further on, but does not militate against the fact that the whole plan is given all in one statement in the place mentioned.

On page 167 the statement opens by saying: "When a swarm issues and returns." Pennsylvania is quite right in thinking that this presupposes that the queen is clipped, for swarms with unclipped queens do not usually return. His queens are not clipped, so



THE "PUT-UP" PLAN.

MRS. BURKHOLDER, OF MICHIGAN.

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that knocks out returning swarms. That, however, does not knock out entirely his using the plan, for he may anticipate the swarming by dealing with the colony before swarming; that is, when he finds queen-cells well advanced. Indeed, that may be better than to wait for actual swarming.

But he does not want to search for queens. That's a more serious affair. Yet even then, something like the plan may be followed. Here is what may be done, giving details as fully as may be allowed: When it is found by the presence of sealed queen-cells or large grubs in queen-cells that the bees are bent on swarming, go to the hive containing the colony to be treated, which hive we will call A, and set beside it an empty hive which we will call B. Lift A off the stand, and set B in its place. One by one lift the frames out of A, brushing back into a A every bee from each comb except one, and then put the beeless combs into B. In this way it is made certain that the queen will be left in A. The one comb is left in A so that bees and queen will not desert. The vacant place left in B may be filled by a dummy or by a brood-comb of any kind from elsewhere. Fill out A with frames of foundation or comb. If supers were on A, as most likely there were, they were of course set aside temporarily while making the changes of comb mentioned. Now set these supers on B, and over them place the cover. Set A on top of all, and cover it up.

There is no communication between the two hives, each having its own bottom-board and its own entrance, as also its own cover. A large part of the bees are in A, but none of the field-bees will remain in it, for upon their return from their first journey afield, they will steer straight for the lower entrance and enter B. Of course all cells upon the combs were killed at the time the bees were brushed from them. Ten days later all cells again started are killed, and the brood-comb with its adhering bees is taken from A and put in B, after which all bees remaining in A are brushed upon the ground in front of B, and allowed to run in at the entrance. A is now taken away entirely, and any combs in it disposed of wherever desired.

This plan with its variation is not by any means given as an improvement, but as fulfilling the desire to operate without being obliged to hunt for queens or to have them clipped.

BEE-KEEPING IN DIXIE

Conducted by J. J. WILDER, Cordele, Ga.

A Good Honey Crop for Dixie

Up to this date (May 5) the reports from all sections in Dixie show that we have already had an average honey crop. Mr. S. S. Alderman, a beekeeper down on the Apalachicola river, in the great tupelo gum belt, reported some time ago that the bloom was not as great this year as usual, and he feared the flow would be correspondingly light, but my apiarist in the tupelo gum region reports a good crop.

South Florida has again had a great crop. The poplar and other spring honey plants up in the hills and mountains are now giving a great yield.

The market is practically bare of honey, and at present new honey is bringing a good price, and shipments are moving rapidly. As we have no uniform prices for honey in Dixie, it is needless to state a figure, but let me suggest that every beekeeper add one or two cents to his former prices; this will mean considerable in the wind up against the higher prices of bee-supplies.

Wants to Move Bees to Make Increase

Mr. Rish, a beekeeper down on the Apalachicola river, wants to know if he could move 50 colonies of bees up the river 75 or 100 miles to the cotton fields, and increase them to 100 colonies during the cotton flow?

Yes, this could be very well done. The cotton is a good honey plant, also a great pollen plant, and the flow is long, and bees would naturally build up rapidly, and probably store enough surplus to carry them over winter. But I entertain a doubt whether it would be best to undertake this venture or make the increase right where they are. There is always some honey coming in on the river from snow vine and other similar vines, and this would make it ideal for increasing where they are located.

Mr. J. K. Isbell and S. S. Alderman, of Wewahitchka, Fla., have for a number of years moved their bees up the river to the cotton fields in order to build them up in numbers and stores for winter, and at the close of the cotton flow moved them back down the river for winter and spring, but their latest report shows that it does not pay them, and that they expect to discontinue this practice. If the flow should not be heavy enough to make the desired increase, a cheap grade of honey could be obtained and a slow feed kept up with good results. It is a lot of trouble and expense to move bees, and this compared to feeding might prove more unfavorable than leaving them where they are for this job.

Back to the Blue Ridge Mountains

On June 1, myself and family, consisting of wife, small daughter and an orphan girl we have taken to rear, will leave for our summer cottage up in the Blue Ridge Mountains, where we expect to spend the summer months. My mother, who has had the privilege of visiting us but one time in 18 years, on account of sickness in her family, will join us and spend the time there with us. We used to spend this time at the seashore, but find that it is more satisfactory in the mountains. This is not done so much on account of my broken down condition as for the betterment of my wife, who has been almost a helpless invalid for years. But I am usually almost to this point in health at the close of the spring work, after the heavy strain of mental and physical labor.

It may be a surprise to those who have never visited me, to know that I take a cheap helper and work from two to five apiaries daily during the spring months. This work consists of looking over brood-nests, ventilating hives, adding storing room, making increase where it is wanted. and keeping it down where it is not wanted. I cannot make the trips by an automobile, but very often travel by rail. At this time all of our experienced helpers have all they can do, and are usually under as great physical strain as I am, but the responsibility of the entire field is on me. Besides this, from 10 to 30 letters go out every 24 hours to beekeepers in different parts of the country, who are not in any way connected with my own bee-business, but desire information. This all plays heavy on a small, frail man, and he must get out from under it as soon as he can.

By June 1, the spring crop of honey is gathered, and removing, packing and shipping is under full way. This can all be done by the well-trained helpers I have without my constant oversight. The sales of the crop of honey made falls to me, and I am more centrally located up in the mountains to do this work. The summer and fall flows come on slowly, and are not so heavy, and no danger of swarming if the bees have plenty of ventilation and storing room, and our help can easily keep up this work. By the time this task comes on, the surplus spring honey has been removed and packed.

At the close of the slow summer flow I am back, and take up the work of making the last increase, requeening and the last general apiary work. My correspondents will please take notice and address me after June 5 at Mountain City, Ga.

The Cause of Swarming—Ventilation the Deciding Factor

The Editor commenting (page 152) on Mr. Randolph's article under "Swarming Notes," page 164, strikes a "key note" when he says, "While there are no doubt cases in which other factors so strongly favor swarming that no amount of ventilation will prevent it, the likelihood is that when other factors are almost but not quite strong enough to carry the day, lack of ventilation is the deciding factor to cause swarming."

Bees for several seasons under the care of a thoughtful and prudent apiarist with good equipment, will swarm but very little naturally during a honey flow if weather conditions remain good during this time, so that the field bees

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eep at work in the usual manner. If during this time we have adverse weather conditions, and the field-bees are confined more or less to their hives, they may naturally acquire the swarming fever, for they seem to have nothing else to do. Under the former conditions the question of ventilation would have had very little if any importance, but under the latter it is the deciding factor.

Not many bees will be seen clustered about the bottom of a well ventilated hive during ideal weather, but when the reverse comes, even the large well opened entrances will be filled with bees, and the spaces between the bottom frames and up between the frames for some distance will be found clogged with bees. They have a job to maintain the heat of the colony and stay about the bottom, and do not crowd the upper part of the hive. As soon as the weather clears these bees clustered about the bottom will return to the field, and there is no more added to this swarming impulse than usual.

There is nothing I dislike more than to find a strong colony of bees with only a small entrance, and with a great fanning corps all about the entrance roaring as if about to smother. If they are not clustering about the entrance, you will find them in small clusters up through the hives, and those scattered about over the comb running as if panic stricken.

This method is poor policy, poor beekeeping, and the cause of poor honey crops. We have tested it too many times. Bees cannot work properly in a hive under such conditions, neither can they evaporate very much nectar, especially if it contains a great amount of water, as it would naturally make thin honey, if not evaporated well. This makes the comb or capping brown over as fast as the honey is finished, and it is hardly marketable.

So we ventilate a reasonable amount by placing under each side of the hive, on bottom-boards, a square ⅞-inch strip cut as long as the hive, which gives a good vent from back to front, and allows a good current of air to pass under and up between the frames if the bees need it; if not, they will cluster there and shut it out. This is also the only sure cure for hanging out during a honey-flow.

CALIFORNIA BEE-KEEPING

Conducted by J. E. PLEASANTS, Orange, Calif.

Crop Notes

On April 17, 18, and 19 there was a very hot dry wind, the temperature rising to 90 degrees one day. This, as is always the case when the temperature reaches that point early in the season, did much damage to the plants in bloom at that time. The black sage (our best honey plant), which was well in bloom, suffered most. It looked for a time as though it were wilted, but in two or three days following the hot wave the weather changed, and the two weeks following were damp. During this time 1.35 inches of rain fell. This gave new life to the plants, and bees are still working on black sage. The beauty of the sages is that they remain in bloom so long, especially the black variety.

While the bees were checked some in their work by the rain and cloudy weather, they have built up rapidly, and most apiaries are strong in bees, and ready for the fine working weather which we have been having of late—foggy mornings and warm sunny days. While few have extracted much yet, except from the orange flow which was light, the outlook now is more favorable.

There is an excellent growth of white sage, though little of it is in bloom yet. It is too early to tell about sumac, but it has come out well from last year's freeze, and ought to give us some yield. There is a report from San Diego county of a lack of early nectar and pollen, causing the bees much loss. A shortage of pollen in southern California is a very unusual thing.

Some Native Honey Plants of Southern California

As California ranks well as a honey-producing State, and as the native flora shows a marked difference from other sections, perhaps a short sketch of our wild honey plants may be of interest. As we go from the cultivated valleys of the south where irrigation is universal to the foot-hills, we begin to notice that the distant purple of the mountains is changing to a soft blend of gray and green. We go higher and are in the midst of the great wild bee-pasture of southern California, the home of the sages, the sumac, and countless others which make what the botanists call the "chaparral belt." They form a dense covering over the mountain sides from the foothills up to about 6000 feet elevation, where this dense growth gives way to the pine forests.

Along the canons are live oaks and sycamores, whose decided dark and light greens lend a pleasing contrast to the duller tints of the mountain sides. This is the bee-pasture which furnished our large crops of the '70's and '80's, before orange or bean nectar were commercial assets.

The black sage is king of them all. When climatic conditions are favorable I think black sage can be relied upon to produce more "gilt edge" than any other plant in the West, and for body and flavor it is hard to excel. It blooms for weeks. The blossom is small and inconspicuous, but what a flow of nectar it can yield!

The white sage is a much prettier plant. Its soft gray leaves and tall blossom spikes make it quite showy; while its pleasing aromatic odor breathes the very essence of wild perfumes. But this queenly plant is much more inconstant than its plainer sister. Some years it produces a good harvest, others very light.

The silver or purple sage, which has silvery leaves and brilliant light purple blossoms, is usually a good producer, but is much restricted as to locality. All the sages produce delicately-flavored white honey.

The "wild alfalfa" is a small legume much resembling alfalfa in habit of growth, but has bright yellow blossoms.

The California sumac is a dull green bush, not so attractive as its eastern relative. It is quite dependable, and produces an amber honey of good flavor. Last year the sumac was badly

APIARY OF B. E. SCHUNCHEL IN CALIFORNIA.

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ANOTHER VIEW OF MR. SCHUNCHEL'S APIARY.
Notice the decoy hive in the tree to the right.

frozen, but is coming out well this season.

The "wild buckwheat" is a species of *Eriogonum*. It grows in almost all localities, but in some, yields a much better grade of honey than in others. Near the coast its honey is apt to be dark and not of a good flavor, while back in the canons bordering on the desert it yields better, and is of good quality.

The "coffee berry" is a beautiful dark green shrub with dark glossy foliage. Its fruit which changes color from red to black, resembles the berries of the true coffee. It grows only in the cool damp canons, and gives a good flow of amber honey.

The "California holly" (which is not a holly at all, being a member of the rose family), yields very freely for but a short time. The honey is white. This is one of our most beauti ul mountain shrubs. Its dark green leaves and heavy panicles of heavy white blossoms make it showy in summer, while its brilliant crimson berries in midwinter brighten the whole landscape. This furnishes the Christmas decorations for all California; hence the term "holly" by which it is known.

There is a gorgeous yellow pentstemon, shrubby in growth, distributed freely along many canons. Its flowers resemble the snapdragon in shape, and are nectar yielding. The dark chamiso or "chaparral," as it is also called, whose clusters of bloom now whiten the mountain sides, is a great favorite with bees, but chiefly for pollen. This is the chief use also of the gray artemisia, which lends much of the gray to the landscape. This plant furnishes abundant stores of winter pollen, but it has of late years spread to such an extent as to crowd out many a worthier plant.

The hoarhound was introduced here. It is a steady yiel ler, but the honey from it is very dark, and the plant itself is such a pest that most people, even bee-men, regret its introduction.

The wild lilac, a beautiful shrub whose sweet-scented, lilac-colored blossoms furnish much pollen, is noticeable on account of its blue pollen. I had a hurry call from a beginner not long ago who thought he had disease among his bees. On inspection it was the blue pollen that had caused the alarm. The bees were rather weak owing to local conditions, but perfectly healthy.

I have mentioned only the most important of the native plants. There are many others which give us nectar in varying quantities.

CANADIAN BEEDOM~

Conducted by J. L. BYER, Mt. Joy, Ontario.

Crop Prospects, Outlook, Etc.

May 12, sugar maples and yellow willows are in bloom. But with weather cool and a drizzling east rain falling, the prospect is not pleasant for the beekeeper who would like to see the bees carrying great loads of pollen from the maples, and an abundance of much-needed nectar from the willows. I say "needed nectar," for although there may be lots of old stores in the hives, nothing seems to be quite as good to cause a great boom in brood-rearing as some nice fresh nectar in combination with the natural pollen gathered at this time of the year. To date of writing the weather has been steadily cool with little precipitation; in fact, unless we soon get rain a short crop of hay is assured.

But bees wintered well, and j dging from present appearances they are steadily building up, even if the days they can fly and bring in nectar and pollen are few and far between. The little clover we had last fall is now past the danger point, and in our section at least it has wintered well.

In another 10 days fruit bloom will be on, and if weather permits queen clipping and other work of the season will be in order. After the long time since active work with bees, we look forward with pleasure to being in the harness again. Only a few weeks at most until the harvest, great or small, will be a thing of the past, and the beekeeper can again take it easy if he wishes. This is one of the drawbacks of beekeeping, looking at it from one angle, for if the great amount of work that is often crowded into a few weeks could be divided up into that many months, it would make things easier all around. But no doubt it is much better than we could possibly arrange it for ourselves.

Newspaper Advertising of Honey Too Expensive

Constantly we hear about the benefits of advertising honey so as to increase the consumption of this useful and toothsome delicacy and food. Any kind of advertising is to be commended as long as it is truthful and not misrepresenting, and while each individual beekeeper can do much in his own neighborhood to increase the consumption of honey, the longer I study the question the more it seems to me that extensive newspaper advertising is impossible. Why? Because the cost of producing honey is too near the selling price to allow much money to be paid for advertising.

Take the various patent medicines, breakfast foods and drinks, different kinds of corn syrups, etc., the names so common to us all through seeing them in the papers that any child could give a list off hand. In almost, if not in all of these cases, the selling price is many times the cost of production, so it is easy to see why they can advertise so extensively. Then, again, each firm is advertising an article produced only by themselves, and they get the benefit of all the advertising done. In the case of honey, if my neighbor beekeeper across the road advertises the good qualities of honey, the chances are that if the advertisement does any good I will share equally, even when I am not paying a cent for advertising.

Newspaper advertising costs a tremendous amount of money if done at all extensively. This means that other forms of publicity will have to be employed if we ever expect to increase the consumption of honey by means of advertising. If I could truthfully advertise that *my* honey was better than anybody's else, it might pay me to advertise; but no matter how good a product we had, very few of us would make such a decided statement as that. I remember tasting a sample sent in

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1. ——. 2. ——. 3. Carl Hanneman. 4. E. S. Hildemann. 5. ——. 6. Joseph Kurth. 7. ——. 8. John Hearn. 9. A. C. Allen. 10. N. E France. 11. Gus Dittmer. 12. Mrs. W. R. Harte. 13. Mrs. W. Habermann. 14. Mrs. C. M. Soelch. 15. Mrs. Frank Kittinger. 16. J. I. McGinty. 17. ——. 18. Mr. Sayles. 19. Freman Johnson. 20. August Diehnelt. 21. W. H. Habermann. 22. H. H. Moe. 23. Harry Lathrop. 24. H. M. Rood. 25. Herman Gloege. 26. Francis Jager. 27. L. V. France. 28. Prof. Sanders. 29. Chas. Alberts. 30. John Wambold. 31. E. B. Rosa. 32. Lawrence Post. 33. N. K. Walsh. 34. Geo. Acker. 35. John Willgrub. 36. Fred Blunck. 37. A. A. Linn. 38. Wm. H. Wallace. 39. M. M. Rice. 40. Mrs. M. M. Rice. 41. G. M. Ranum. 42. Jacob Paulson. 43. Ogden Glaeden. 44. A. C. Woodbury. 45. E. Engels. 46. A. L. Kleeber. 47. ——. 48. ——. 49. ——. 50. ——. 51. Louis Post. 52. ——. 53. H. C. Ahlers. 54. W. C. Smith. 55. Mr. Huffmann. 56. Frank Kittinger. 57. Geo. G. Harte. 58. Mr. Sykes. 59. F. E. Matzke. 60. L. W. Parman.

response to an advertisement stating that the honey had a taste of the woods, and was superior to all other honey, etc, When we found the sample inferior, you all know what we thought of the advertiser. This is an extreme case, no doubt; it simply shows one difficulty in advertising honey.

FAR WESTERN BEE-KEEPING

Conducted by WESLEY FOSTER, Boulder, Colo.

Shipping Bees from Southern New Mexico —Loss in Weight

May 4, five 2-pound packages of bees were shipped to me by express from southern New Mexico. They were shipped without queens. Leaving there at 10 a.m. of the 4th, they reached Boulder at 9:35 a.m. of the 7th. At 11:30 a.m. they were placed in empty supers over weak colonies of bees with which I wished to unite them. By 4:30 p.m. of the 7th, the bees were out of all the shipping-cages in which they came. Counting from the time they were put into the cages to the 4th, the bees were in them about 70 hours. The weight given, gross, for the five packages at the shipping point was 23 pounds. The gross weight when I received them was 19½ pounds, showing a loss in weight of 3½ pounds. This was the amount of water and candy consumed and loss in bodily weight of the bees. There might be a slight variation in the scales, but mine are quite accurate, and I assume that those at the shipping point were accurate also.

The weather was almost ideal for springtime when the bees arrived, so that conditions could hardly have been better. The packages were numbered 1, 2, 3, 4, 5.

Number 1 weighed 4 pounds and 8 ounces gross when put up, and 3 pounds and 12 ounces gross when received. The net weight of the live bees at time of packing was 2 pounds, and 1 pound and 10 ounces on arrival. There were less than 25 dead bees in the package. The bees ate about one-fourth of the candy provided, and the water can was about two-thirds full. Three-eighths of a pound must represent the loss in bodily weight, or probably more accurately must be the amount of honey the bees were loaded with before they were put in the cages.

Number 2 weighed 4 pounds and 12 ounces when put up, and 3 pounds and 12 ounces when received. The weight of the live bees was 1½ pounds. There was about ¼ pound of dead bees in the package. One-half of the candy had been consumed, and also about one-half of the water. The loss in bodily weight of the live bees was about ¼ pound.

Number 3 weighed 4 pounds and 8 ounces when put up, and 3 pounds and 4 ounces when received. The light weight of this package is explained by the fact that the cover to the water can came off *en route* and the water was lost. There was 1⅛ pounds of live bees and about ⅛ pound of dead bees. The loss in bodily weight of the live bees was about 12 ounces, unless there was some loss in the weight of the dead bees, which would equal the loss in weight of the live ones. The great loss in weight is accounted for in this case by the lack of water. There was, however, only half as many dead bees in this package as in No. 2, which had plenty of water. But this cage, No. 3, was needing attention when it came, as the bees had their tongues out and were crying for water. Strange as it may seem the bees in this package were loath to leave it, and the last half of them finally had to be shaken out. They had consumed one-half of their honey.

Number 4 weighed 4 pounds and 12 ounces when put up, and 3½ pounds when received. The weight of the live bees was 1⅛ pounds, and there were over ¼ pound of dead bees in the cage. This cage had the most dead bees in it. They had eaten half their candy, and the water can was still full, the little hole in the cover being too small apparently, and also clogged with a speck of dirt.

Number 5 weighed 4 pounds and 8 ounces when put up, and 4 pounds when received. There were less than 25 dead bees in the cage, and the weight of live bees was 1⅞ pounds. This cage came through in the best condition of any. The candy had only been one-third consumed and little of the water used. The hole in the water can also seemed to be clogged, but the bees must have gotten some of the water, as they did not seem to be suffering.

The cages were tacked together with lath, and were spaced about 5 inches apart, so that there would be ample circulation between the clusters in the cages. The express was $1.64 on the 23 pounds weight. If the bees could have been sent by parcels post the cost would have been 98 cents.

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It will be seen that 10 pounds of bees were shipped in these five packages, and that 7½ pounds of live bees were taken out. There was a loss of less than one pound of bees dying *en route*, the remaining loss being in bodily weight as mentioned above. It would seem that, for shipment this distance, 25 percent more bees would have to be put in to make the weight of full 2 pounds hold out.

It is my intention to keep up the experiments in shipping bees without combs until we know what we can depend upon, then perhaps it will not pay us to winter our bees in the North. I shall receive another shipment of five packages in a day or two, and it is probably on the road now. The weather is warmer and the bees may not come through in such good shape.

ONE OF THE APIARIES OF PIERRE ODIER, CELIGNY, SWITZERLAND.

CONVENTION PROCEEDINGS

The Wisconsin State Meeting

The Wisconsin State Beekeepers' Association met in convention in Madison Feb. 2. N. E. France was elected temporary president. The Assembly Room was well filled, over 80 beekeepers, including 8 ladies, being present.

Rev. Francis Jaeger, of the University of Minnesota, addressed the convention on "Present Needs of Wisconsin and Minnesota Beekeepers." His argument was a comparison of old-time and present day methods, not only in beekeeping but in dairy work. He urged beekeepers to organize along the same lines as the various agricultural societies.

M. E. Eggers spoke on, "Should a young man specialize on beekeeping?" The report of A. C. Allen, delegate to the National, was substantially as published in the Beekeepers' Review. A committee on resolutions was appointed, consisting of E. B. Rosa, H. H. Moe, and Herman Gloege.

The convention adjourned until 1:30 p.m.

At 1:30 p.m. the meeting was called to order, and Rev. Francis Jaeger addressed the convention on "A separate department of beekeeping at the State Agricultural College." Brother Jaeger showed the necessity of its being not only separate, but independent, as in the Minnesota University. Here in Wisconsin it is a department of the Agricultural College. Under Prof. Sanders it is perfectly satisfactory to the Wisconsin State Beekeepers' Association, but it might not be so under a possible successor.

Prof. Sanders spoke on "The value of a single beekeeping course at the State Agricultural College." He is held in high esteem by the beekeepers, and always commands close attention.

L. V. France exhibited charts, showing distribution of different honey-plants, number of colonies, etc., in the different counties of the State. Mr. France stated that answers to his inquiries had not been as full as anticipated; however, he was voted the thanks of the convention with the request to continue the work.

After the supper a large number went to the Agricultural College, where they were entertained by an address by F. Wilcox, general survey of beekeeping, State and National; also a stereopticon entertainment by N. E. France, inspector of Wisconsin apiaries.

SECOND DAY—MORNING SESSION.

A good share of the morning was taken up by "five minute talks" on "One important thing I have learned this year."

The election of officers for ensuing year resulted as follows: President, N. E. France; vice-president, Frank Wilcox; secretary, Gus Dittmer; treasurer, Harry Lathrop.

It was decided by an almost unanimous vote not to send a delegate to the National.

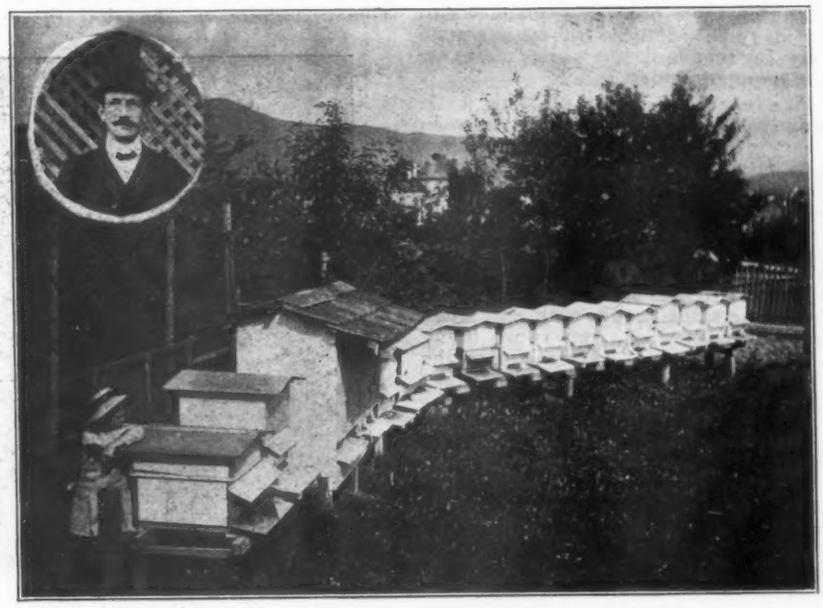
The Committee on Resolutions reported the following:

WHEREAS, The Supreme Ruler of the universe, in His all-wise providence, has deemed fit to call from our association our beloved president, Jacob Huffman; therefore, be it

Resolved, That we, the Wisconsin State Beekeepers' Association in convention assembled Feb. 3, 1914, do hereby express our sorrow at the loss of our beloved President, that the beekeeping world has lost an able counselor who will be hard to replace; therefore, be it further

Resolved, That a copy of these resolutions be spread upon our minutes; that a copy be sent to the family, and that the chair be draped in mourning during the time of this convention.

H. H. MOE.
E. B. ROSA,
HERMAN L. GLOEGE,
Committee.



JOS. WALTHER AT DELEMONT AND HIS APIARY.

American Bee Journal

The resolutions were adopted by a unanimous rising vote.

A paper was read by Mr. Frank F. France.

On motion, N. E. France was recommended for the appointment of State Inspector of Apiaries by the Governor. Mr. Frank Wilcox was recommended for the appointment of judge of the Apiarian Exhibit at the State Fair.

Meeting then adjourned.

GUS DITTMER, *Sec.*

NOTES FROM ABROAD

BY C. P. DADANT.

Zermatt, Neuchatel

The trip to Zermatt, from the head of Lake Geneva, is up the valley of the Rhone, then up the Visp until we reach the center of a cluster of snow-covered mountains, of which Monte Rosa and the Matterhorn are the highest. But the latter is the more conspicuous, owing to its sharp peak.

The Rhone river which we first saw at Lyon, then at Geneva, at its exit from the lake, is the feeder of that lake, through which it flows from east to west. As we ascend eastward towards its source, we pass through the Canton of Valais. We again see vineyards, on shelves one above another, meadows and small fields of grain and potatoes, looking like the patches of a quilt. Irrigation is practiced, for the climate is dry and the water from the peaks is plentiful. We see it run in every direction. It is diverted into the fields by side ditches, and a flat stone serves to turn it right or left as needed. To one accustomed to the majestic and quiet flow of the Mississippi, the waters of the Swiss mountains appear in a great hurry, for they tumble in their haste, in every direction, and we can go nowhere without hearing the murmur of the brooks. There are running fountains in every village. The houses seem odd, with their long eaves and brown walls. The roofs are often made of coarse flat stones, laid like shingles. But how they managed to build some of these houses is a mystery, for they look like eagles' nests on the mountain side.

We reached Zermatt on Aug. 9. It was cold, and we could see snow in every direction. To enjoy climbing, one must *train*. We took no time to do this. An inclined cog road took us clear up to Gornergrat, where an immense hotel has been built. There we stayed over night in company with a dozen other tourists. The hotel was supposed to be heated, but they had only pine wood to fire with, and when we complained of our room being chilly, they excused themselves on the the bad quality of their fuel. It was at this hotel that, for the first time in our lives, we had to pay even for the water we drank. We went away the next day, disgusted with the accommodations, but delighted with what we had seen at sunset and sunrise. From the top of the Gornergrat, we had been shown, through a telescope, the ridge line forming the Italian and French frontiers, guard houses, flags, caravans, of alpinists walking on the snow, things which, owing to the distance, did not make even a speck on the immaculate white of the snow, when sought with the naked eye. The setting or rising sun, shining on that immensity of white, shading it with pink and red, made an impression beyond description. Instead of 12 tourists, there should have been 1200. The thousands who come stay there only a part of the day, owing to the defective accommodations of that huge caravansary, which they call "Hotel Gornergrat." The crowds are found below at Zermatt.

Returning to Zermatt, we stayed there only long enough to visit the immediate surroundings, especially the Gorner Gorge. This, however great and frightful, is a diminutive wonder when compared with the gorges of the Aare at Meiringen, which we saw later in the month.

Back to cultivated lands and warmth, we landed at Brig on the 11th, where we proceeded to get rested and warmed up, in a very comfortable hotel. Brig is near the Swiss end of the Simplon tunnel. It rained and we stayed there two days, at the end of which we left for Interlaken, via the new railroad of the Lotschberg, a beautiful scenic line, just completed. Reached Spietz for dinner. It rained. Went on to Interlaken. It rained that afternoon and all the next forenoon. We then resolved to go back towards Lake Geneva, where we had left the fair weather and where we had a friend to visit—a relative of one of our neighbors in the United States—living in the city of Rolle. Passing through Bern, Fribourg and Lausanne, we reached Rolle in the evening. The rain caught up with us, but had spent its force and clear weather followed.

In these trips we heard more German spoken than any other tongue. But it would not do to speak secrets aloud, when using either French, English or Italian, for everybody seems to understand everybody else. Americans are so numerous that little attention is paid to them. However, an American family, in a touring-car with a colored chauffeur, attracted the curious at Brig. Evidently colored men are rare in Switzerland.

While in Rolle, the friend we were visiting accompanied us to a litte town up the sunny hills that beam upon the lake, to visit a school teacher, who is a beekeeper and an apiary inspector. He had called him on the telephone and announced that a foreign beekeeper wished to visit him. This apiarist had bee fever, the genuine disease, for he awaited us eagerly and could talk on but little else. He had some 60 colonies, all hybrids. The hybrids of Italian and Swiss bees are almost uniformly reared in French Switzerland, through the slow but steady importation of Italians across the Alps. I have given in the December number my explanation of why the pure Italians are not liked in Switzerland. It is useless to repeat it.

Here I heard for the first time in Europe, of European foulbrood. He had had it, and had cured it in other apiaries as well as in his own. He had had combs containing honey from diseased colonies accidentally robbed by healthy colonies without bad results. So he readily understood that our method of cure by changing the queens would be likely to succeed. However, he practiced the starving method, removing all the combs. According to Dr. Carton, this ought to succeed in any case. He thought so himself.

He had seen the May disease, and I gave him the address of Prof. White,

ROUGH AND READY BEE-CULTURE IN CORSICA.

American Bee Journal

BEE-CULTURE IN CORSICA—J. RUFFY IN FOREGROUND.

of Washington, D. C., asking him to forward samples to him, whenever he found it. He was sure that it was caused by the famous "nosema." Yet Prof. White has failed to discover this parasite in a number of samples sent him.

We walked up to his house, and sat down and I made note of his replies to my questions. He was intensely interested. In discussing foulbrood, I had occasion to ask him whether he had read what we wrote about it in the French edition of Langstroth Revised. Then it became apparent that he had misunderstood our name when we were introduced. He jumped up from his chair and insisted on shaking hands over again with both Mrs. D. and myself. He was so enthused that he would hardly let us depart when the time came for us to take leave. It was very amusing and interesting.

Distances are not great in Switzerland, and one is soon transported from one part to another. The railroad accommodations are fine. The coaches have, like ours, a passage through a center aisle, but instead of being in only one or two compartments, each car has five or six sections. About two-thirds of them are smoking compartments, for smoking is very popular, whether pipe, cigar or cigaret. The women are accustomed to it. Once or twice we even saw some good-looking women smoking like the men. (Why should they not?) The smoking compartments, marked "raucher, fumeurs, fumatori," in German, French and Italian, are always the most crowded.

During the summer months the crowds are immense. When you reach a railroad station in any large tourist resort, you wonder how they can succeed in accommodating the thousands who are there. But the train comes in, unloads, reloads, and goes again, with everybody aboard in comfort.

In the afternoon of the 15th, we started for Boudry, near Neuchatel, the home of Mr. Gubler, from whence I wrote the letter inserted in the October Bee Journal. In three hours we were there. A young man with a spring wagon awaited us at the station and took us at once to the Orphans' Home managed by Mr. Gubler, located about a mile away, on the slope below the mountain, where pure air and open fields are enjoyed by some 50 boys between 8 and 16 years of age.

Mr. Gubler is not only the editor of the Bulletin D'Apiculture, which has taken the place of the Revue Internationale, formerly published by Mr. Bertrand, he is also president of the Société Romande D'Apiculture. The name "Romande" represents nothing connected with Rome, as might be understood by the uninformed. It represents simply that part of Switzerland in which the French or Romanic language is spoken, in contradistinction with the parts of the same country where German is used. It covers the cantons of Geneva, Vaud, Neuchatel' and a part of Valais, Fribourg and Bern. The association numbers about 2000 members, and is subdivided into some 20 different branches, which hold local meetings and send delegates to the central association.

The little magazine, which is their official organ, is furnished to members at 42 cents per annum, while outsiders have to pay 62 cents. They have a mutual insurance against losses by foulbrood, and have also succeeded in getting from the several cantons regulations for the inspection of bees and the destruction of contagious diseases. Apiaries are small but numerous. At the meeting of the Neuchatel section, which we attended on the Sunday following our arrival, about 80 members were present. We give a cut of this on our cover page. The meeting was held in the basement of a house right by the apiary of Mr. Belperrin at Areuse. But the photograph had to be taken upon the hillside, in the vineyard, because the apiary is located under dwarf fruit trees in such a manner that a good picture of it could not be made. In the evening the beekeepers were congregated together at a banquet given in the neighboring village on the shore of the Lake of Neuchatel. As a trolley line joins Neuchatel with the vicinity, we were only 15 minutes from our lodgings. The lake is some 25 miles long, with pretty villas and villages all along.

A few details as to our quarters in the Boudry Home and the hospitable reception we enjoyed, will give a local coloring to our description. The guest chamber in the Home is a special room in the second story of the big barn. However queer this may appear to American readers, this chamber is kept in as fine a style as some of the best hotel rooms, with white walls, fine furniture, framed paintings on the walls, etc. Flowers fresh from the garden were daily brought in a vase, and every night we found an immense hot-water bottle in our bed. We protested against this, but it was of no avail, and we had to submit. The evenings were cool, and our hosts were unwilling to chance our catching cold. The private office of the manager, in the main building, was our writing room, and upon his desk we found a framed picture of Grandpa Dadant. It was there also that I first saw the magnificent work of Gaston Bonnier on the flora of France, Switzerland and Belgium.

While at Boudry, we had numerous invitations from local beekeepers. We accepted only a few, for our time was limited.

CONTRIBUTED ARTICLES~

Sense of Smell of the Honey Bee

BY N. E. MC INDOO, PH. D.,

BUREAU OF ENTOMOLOGY, WASHINGTON, D. C.

(*Extract from Journal Exp. Zool., Vol. 16, No. 3, April, 1914.*)

EVER since man has kept the honey bee, he has asked the following questions in regard to its sense of smell: (1) How well can the honey bee smell? (2) Where are its olfactory organs located? (3) How important is this sense in the lives of bees? Both scientists and beekeepers are now generally agreed that the honey bee has an acute sense of smell, and that its olfactory organs are located in the antennæ, but the critics have never been convinced that the antennæ carry the organs of smell, because all the antennal organs are covered with a hard membrane through which odors must pass in order to stimulate these organs.

During the past three years the writer has devoted his entire time to a study of the olfactory sense in the honey-bee

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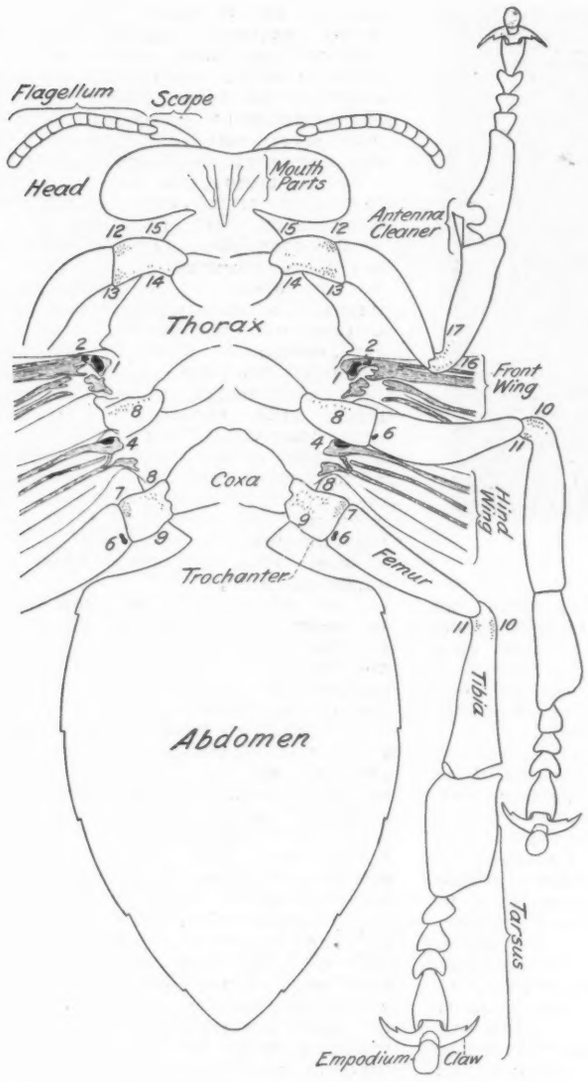

FIG. 1.—Ventral view of a worker-bee, showing location of groups of alfactory organs as indicated by the numbers.

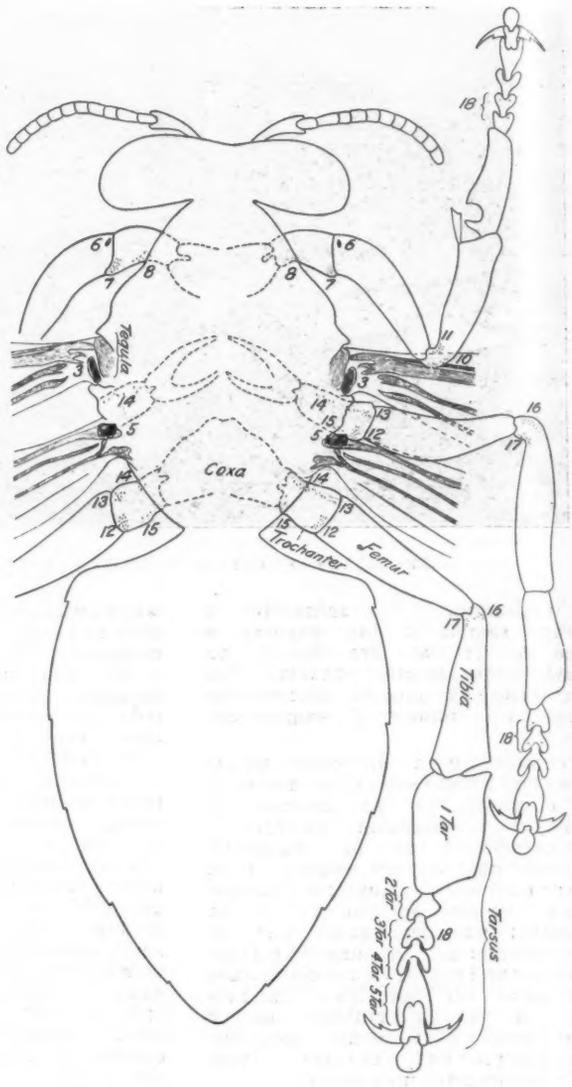

FIG. 2.—Dorsal view of a worker-bee, showing location of groups of olfactory organs as indicated by th e numbers.

and this work is still being continued. This extract is taken from an 80-page paper which deals with the first two enumerated questions. Of the 24 figures given in this paper only 5 will be reproduced here.

Dugés, in 1838, was the first actually to try to prove that the olfactory organs lie in the antennæ. He cut off the antennæ of two male moths and then these insects were unable to find a female that they had previously been able to locate while their antennæ were uninjured. He also cut off the antennæ of many blow-flies, and then these flies were unable to find putrid meat as before. Dugés, like the later observers, failed to study sufficiently the behavior of his mutilated insects so that it could be compared with the behavior of unmutilated ones. The insects with amputated antennæ used by him certainly did not live long, and it is not reasonable to suppose that an animal, however low or high it may be, would go courting or hunt food when it has lost two appendages as important as the antennæ.

Since 1838, many observers have tried to prove experimentally that the organs of smell in all insects are located in the antennæ. Not until 1880 were scientists convinced that the olfactory organs really lie in these appendages. At this date appeared Hauser's large and comprehensive paper which seemingly settled all doubts on this subject. When we critically examine this paper, however, it is easily seen that his results are not infallible. Hauser studied the behavior of various insects before and after the removal of the antennæ. When these appendages were cut off many individuals soon became sick and died, although some of them lived thereafter for many days. In insects with the antennæ dipped into melted paraffin, the behavior was similar to that of those with the antennæ amputated.

After performing many experiments with a certain genus of beetles, he concluded that these insects lose the olfactory sense by the removal of the antennæ. Experiments with several other genera of insects gave the same results, but other beetles belonging to three genera gave less satisfactory results. These never completely failed to respond to strong-smelling substances. Experiments with Hemiptera (bugs) gave a still less favorable result. After the loss of the antennæ these insects reacted to odors almost as well as they did before their antennæ were amputated.

The following results were obtained by the writer. To study the behavior of bees and to test them with odors under conditions which permitted of their close observation, triangular cases were used. These were made of three narrow wooden strips, two of which were 10 and the third 6 inches long, each strip being half an inch thick. Cheesecloth served as a bottom and glass as a top for each case. Nine middle-aged workers, a queen, now and then one or more drones, a lump of candy, a small piece of comb, and a piece of cotton wet with water were put into each case. Thus confined, workers live on an average of 9 days and 3 hours, queens 16½ days, and drones 3 days and 9 hours. The following sources of odors were used: Essential oils of peppermint, thyme

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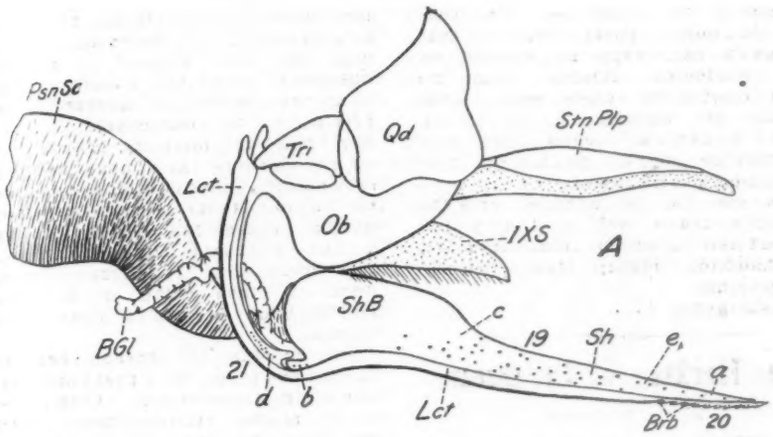

FIG. 3.—Side view of sting of a worker-bee with its accessory parts, showing location groups of olfactory organs as indicated by the numbers.

and wintergreen, honey and comb, pollen, flowers of honeysuckle, leaves and stems of pennyroyal, spearmint and sage, and bee stings. After testing many workers, queens and drones, with these odors it was found that they have an acute sense of smell. Drones smell slightly better than workers, and workers smell considerably better than queens.

To study the behavior of workers with mutilated antennæ, and to see if the antennæ carry the olfactory organs, the following experiments were performed: One antenna of each of many workers was pulled off. Thus mutilated bees are not entirely normal in behavior. They live only two-thirds as long as unmutilated ones, and seem to smell one-half as well as normal workers. Workers with one antenna pulled off and with two to eight joints of the other one cut off are still more abnormal in behavior and respond less slowly to odors. Workers with both antennæ pulled off, cut off, covered with shellac or celloidin are entirely abnormal in behavior and live less than one day. They fail to respond to all odors. The antennæ of 95 workers were burnt off with a red-hot needle. These workers were also abnormal and lived only 17 hours on an average. Seven of them which lived longest were tested with odors. They responded one-half as rapidly as normal workers. The antennæ of many workers were covered with liquid glue. Twenty-one were obtained which were fairly normal in behavior, but they lived only 24 hours on an average. They responded to odors practically as well as unmutilated workers.

From the preceding experiments it is evident that bees with mutilated antennæ are not normal, and that their slowness in responding to odors or their entire failure to react when tested is due to the injury caused by the mutilation. It seems, therefore, that the antennæ have nothing to do with the sense of smell. Since bees have an acute sense of smell, and as the antennæ do not carry the olfactory organs, we must look for them elsewhere.

A few years ago the writer described some organs found on the appendages of spiders. It was proved experimentally that these are olfactory organs. After failing to prove that the antennæ of bees carry the olfactory organs it was only natural to examine these insects to see if they have organs similar to the olfactory organs of spiders. At once the same organs were found.

Looking at Figs. 1, 2 and 3 it is easily seen where the olfactory organs are located. Groups 1 to 5 lie on the bases of the wings as indicated by the numbers. Groups 6 to 18 lie on the legs. Groups 19 to 21 lie on the sting (Fig. 3). The same organs are found on all mouthparts, but they are not discussed in this paper. The antennæ of the bee do not carry any of these organs.

Drones have an average number of 2604 olfactory organs, 606 which lie on all six legs and 1998 on all four wings. Workers have an average total number of 2268 olfactory organs, 100 of which lie on the sting, 658 on all six legs, and 1510 on all four wings. Queens have an average total number of 1860 olfactory organs, 100 of which lie on the sting, 450 on all six legs. and 1310 on all four wings. Those on the legs are rather large, but those on the wings and stings are quite small.

Under the microscope these organs appear as bright spots. At the first glance they resemble hair sockets (Fig. 4, PorApHr) from which the hairs have been pulled, but after a closer examination a striking difference is usually seen. Each bright spot is surrounded by a dark line, the pore wall (Figs. 4 and 5, PorW). Outside this line the chitin or "skin" (Fig. 4, PorB) may be light or dark in color, but inside the line the chitin (Figs. 4 and 5, ChL) is almost transparent, and at the center there is an opening, the pore aperture (Figs. 4 and 5, PorAp).

In order to study the internal anatomy of these organs, pieces of the appendages bearing the groups were "pickled" in a special fluid, and these pieces were cut crosswise into many extremely thin slices called sections. These sections were mounted on strips of glass, called microscopical slides,

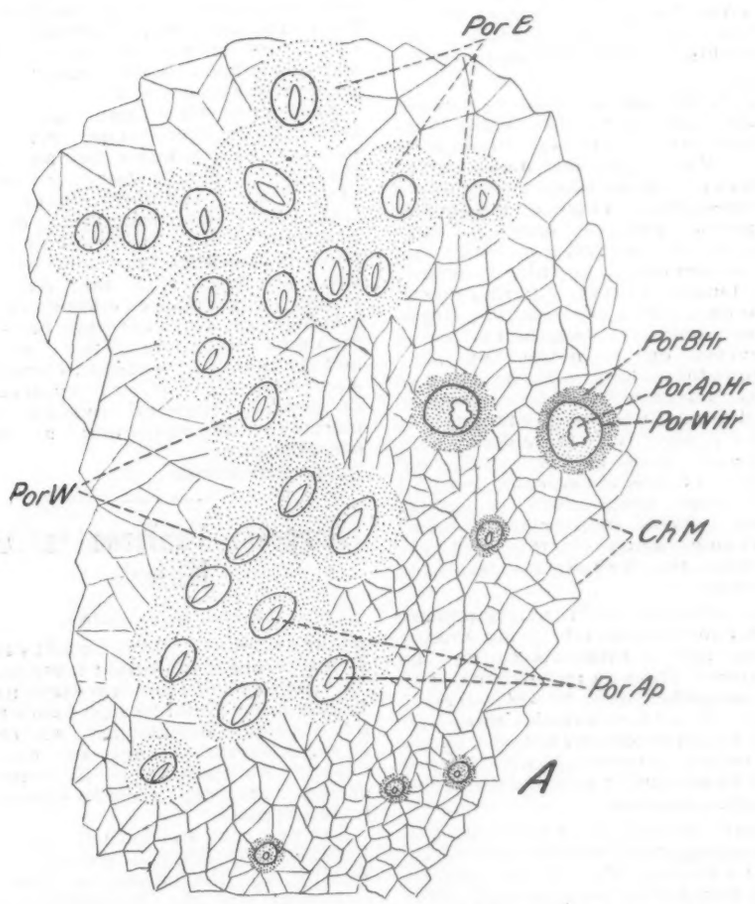

FIG. 4.—Group 6 of olfactory organs from hind leg of a worker-bee, showing the external appearance, highly magnified.

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and they were then stained with dyes. Looking at one of these stained sections under the microscope, one or more of the olfactory organs split open is always observed. From Fig. 5 it is seen that one of these organs is an inverted flask in the chitin (Ch). It has a wide neck (NkFl) and a flaring mouth (MF1), and its bottom is two-thirds filled with a hollow chitinous cone (Con). A sense cell (SC) lies just beneath the flask. Its outer end (SF) runs all the way to the opening (PorAp) in the chitin, and its inner end (NF) runs to the main nerve in the appendage. It is thus seen that the substance (Cyt) in the sense cell comes in direct contact with the air containing the odor, and odors do not have to pass through a hard membrane in order to stimulate the sense cells in the antennæ.

To determine the function of these organs the wings, legs and stings of many workers were mutilated. The behavior of the mutilated bees was carefully studied, and they were tested with odors in the same manner as already described. The stings of 100 workers were pulled out. These bees lived 30 hours on an average. Twenty of them were tested with odors. They

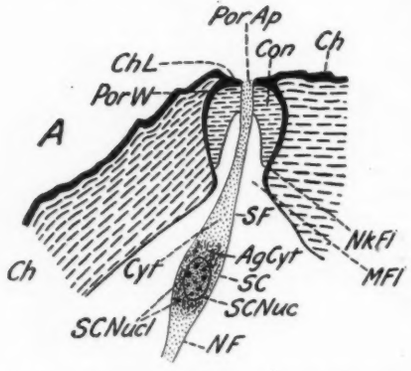

FIG. 5.—Cross section of a typical olfactory organ from group 10, showing the internal anatomy, highly magnified.

responded only slightly, more slowly than unmutilated bees. The wings of 28 workers were pulled off. When tested with odors, these bees responded one-eighth as rapidly as normal bees. The bases of the wings of 20 workers were covered with glue. When tested, these bees responded also one-eighth as rapidly as normal bees. The organs on the legs of 20 workers were covered with a mixture of beeswax and vaseline. When tested, these bees responded two-fifths as rapidly as unmutilated workers. The wings were pulled off and the organs on the legs of 20 workers were covered with the beeswax-vaseline mixture. When tested with odors these workers responded one-twelfth as rapidly as unmutilated workers. All of the workers with mutilated wings and legs lived just as long in the observation cases as did unmutilated workers, and they were absolutely normal in all respects except they reacted to odors more slowly.

Judging from the anatomy of these organs, and from the preceding experiments it is only reasonable to regard these structures as the olfactory organs in the honey-bee. The writer has also made a special study of these organs in ants, wasps and hornets, and the conclusions obtained from this study confirm the above view. These organs are common to all insects, while the antennal organs differ much in structure, and no one kind of them is common to all insects.

The view that the antennæ carry the olfactory organs held so long by beekeepers and scientists must, therefore, be abandoned judging from these investigations.

Washington, D. C.

The Marking of the Queens

BY DR. BRUNNICH.

ABOUT 10 years ago I marked my queens with a mixture of glue of isinglass and color, but I was not contented with the results. The odor of this glue was very disagreeable, and the bees certainly detested it as well as I. It required several minutes for the glue to dry, and it was not possible to give a nice mark to a queen. Holding the marking of queens a very valuable thing, I was therefore glad, when, in a convention of the Swiss bee-breeders, a friend of mine gave us a better method, which I will describe at once. In a cup of porcelain I grind some *color powder* (a teaspoonful), adding by little and little some good lacquer until the consistency is half liquid. It is a matter of experience to get the best consistency; at all events the lacquer must *not be too thick*, because then the marking is impossible and does not remain.

To give the mark of color to a queen, I always hold her by the wings in my left hand and let her take hold on a table. With a little instrument, which consists of a thread-like wire which is bent one-sixteenth inch at the point at an angle of about 45 degrees, I make my marks on the thorax. With this little instrument I am able to make a great number of very different marks. Sometimes I give *one point*, two, three, or four points, a longitudinal *bar*, a transversal one or oblique one, or I combine those bars with one or two points; sometimes I make a *cross* in two different positions; sometimes a H or a U, etc. With the colors *I vary every year; white* (not very good), *red* and *yellow* (excellent colors), *green*. I never tried blue, silver, or golden bronze. Every four years the same colors come again. If the marks are well made, they may remain clearly for four years.

The *advantages* of the markings are various and considerable. How easily a queen with a bright mark may be recognized from a great distance, and how agreeable it is to seek such a queen! It is a very valuable thing, if a queen has to be superseded by a young one; only if a queen is well marked may I be absolutely sure that the superseding has succeeded.

I know from a large experience that many a beekeeper believes the superseding a success, while it was another young queen bred from the bees of the hive which deceived the beekeeper. Even *clipping* is not sure, because it may happen that the wings are injured in a manner that it may seem as if the wing had been clipped. I am very mistrustful when the excellent results of any new method of superseding are praised by the beekeepers. I think I have tried all methods (always with *colored* queens), and have seen that *every* method gives a failure under certain circumstances, even if performed with all precautions. Often the hive will not be looked after in three or four weeks, and of course a young queen will have brood in all stages, and the happy bee-man is proud of his success.

The marking of queens, bees and drones has given me a great many very interesting experiences. Often I saw, at my mating stations, that a queen was not in her own nucleus, but in a strange one; she had flown into the false hole and had been kindly accepted. Once I had an excess of queen-cells in a dequeened colony in my bee-house. When I came to take the cells they had disappeared; but instead of them I saw a young fertile queen. Noticing the colored mark on her back, I immediately recognized a queen which had been before in a not very distant nucleus, where now she was no longer to be found. Similar examples I have often seen. It is a nice thing, which I have often observed, to see in a hive an old queen with her mark, and not far from her her daughter with a different colored mark. For knowing exactly the *age* of a queen there is no other means than a good marking. I have sometimes read of queens 6 years old. I, for my part, am distrustful of such statements, having never seen a queen older than 4 years.

Sometimes nice things may be observed by marking young bees. We may then exactly know their age, when they fetch pollen, honey or water. Once I saw a bee which fetched wax from a little lump lying aside; quickly I marked it with yellow color, and could then observe for some days the same bee fetch from that wax. My son and I have marked quite differently a number of water-carrying bees and then noted the time of their sucking and the time they needed to bring the water home, etc. For the exploration of certain scientific questions the marking of the bee is quite an indispensable matter.

Zug, Switzerland.

European Foulbrood at Dr. Miller's

BY DR. C. C. MILLER.

IN the season of 1913, I had 24 cases of European foulbrood in my apiary. Almost all of them were very light; I think none would be called very bad; but if a single diseased cell was found in a colony, that colony was called a "case." As there were 83 colonies, spring count, that made 29 percent of them affected.

The first case was spotted April 22; 15 cases were found at different times in May; and the balance in June, the last being June 18. Whenever a case was found, it was marked in red ink in the regular record-book, and any en-

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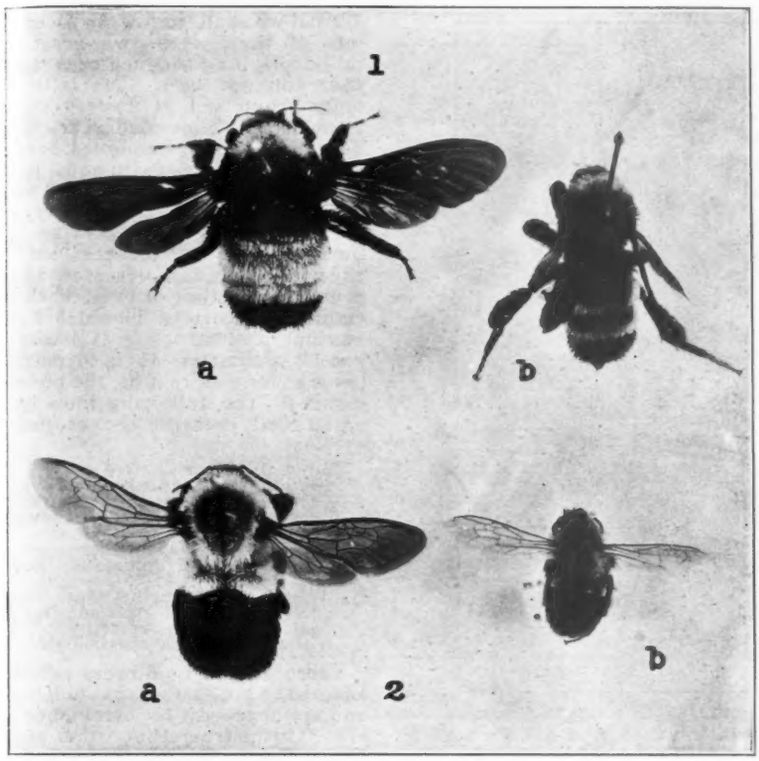

FIG. 1.—Two common bumblebees. 1. Bombus americanorum; *a*, female, *b*, worker. 2. Bombus impatiens; *a*, female, *b*, male. (See next page.)

try made at any time referring in any way to the disease was marked with red. That made it easy to tell at a glance whether any colony was affected, and what pertained to the disease without having to read over the whole record.

HOW EUROPEAN FOULBROOD WAS TREATED.

June 2 and June 10 were the dates on which nearly all the cases were treated. The treatment was simple. As the cases were mild and the queens good, there was no need to destroy or remove any of the queens. (In very bad cases it is better to destroy the queen. Not that the queen herself has the disease, but she has become poor, perhaps because of having lived in such a bad atmosphere. In mild cases she is not affected.) In all but a few cases the queen was caged in the hive for 8 or 10 days, and then fed. That's all there was of the treatment; just stopping the queen from laying for 8 or 10 days. Possibly a week would be long enough, but I wanted to be on the safe side.

In the remaining cases the queen was allowed to remain without being caged. In four cases, in the middle of the day or a little earlier, all the brood and adhering bees were *quietly* removed (and put elsewhere in an upper story over an excluder), clean brood from elsewhere was given to the queen, allowing the returning field-bees to care for the brood. That was all the treatment they received. The nurse-bees had been quietly removed so they would not be made to fly and return to the hive, the field-bees had no foul food for the babies, and could get none from the clean brood, so there was nothing to continue the disease. This plan allowed the queen to continue laying, but taking away all the younger bees stood over against that, and caging the queen is less trouble.

In two cases the treatment was simpler than the last given. All the brood, with adhering bees, was put in an upper story over an excluder, and the queen was left downstairs to start a new brood-nest. If this plan should prove generally successful, as it did in these two cases (one of them was, I think, the worst case in the apiary), it may be the best plan to use with extracting colonies. It has the advantage that it is nothing more nor less than the Demaree plan to prevent swarming. For section work the caging plan is all right for mild cases. For severe cases the queen should be killed and replaced after 8 or 10 days by a vigorous laying queen of best Italian stock. Still better it may be to introduce a ripe cell or just hatched virgin at the time of removing the old queen.

One thing that has not been mentioned should be strongly emphasized: *In all cases treated the colony was strong or else made strong before treatment by the addition of brood and bees.*

FOLLY OF DESTROYING COMBS.

I know there are those for whom I have great respect who have bitterly denounced the practice of trying to save the combs in treating European foulbrood. In my first dealing with the disease I destroyed hundreds of brood-combs. If I am forgiven for it I'll never do it again. Please be sure to note that I'm talking about European, not American foulbrood. The loss of the combs is not all there is of it. Indeed, I think that's the smaller part. The greater loss is from the setback in the work of brood-rearing. It seems to knock things endways for weeks if not for the season. Far less is the interference when egg laying is suspended for 8 or 10 days.

I think I hear some one say, "But your treatment doesn't seem effective, for you keep on having the disease, while with the orthodox treatment and the combs destroyed there's an end of it." Pardon me; that may be true with regard to American, but not as to European. I treated the disease after the most approved orthodox fashion, destroying, as I have said, hundreds of combs, and so far as I could see the disease was just as willing to return as with the less drastic treatment. I think I'd rather keep brood and combs.

EFFECT OF EUROPEAN FOULBROOD ON THE HONEY CROP.

Some curiosity has been expressed to know what effect the disease had upon the 1913 honey crop. Is not the fact that the apiary holds the world's record for the largest average of sections (266.47 per colony) from so large a number as 72 colonies enough to show that European foulbrood did not greatly interfere with the crop? But it may be more satisfactory to go into particulars.

Part of the diseased colonies worked on extracting combs, and no account was kept of their work; we can consider only the 17 that worked on sections. These 17 averaged 232.29 sections each. And now I'm just a little at a loss to know how to figure. There were 72 colonies, spring count, that worked on sections, but another colony was made out of these 72, making 73. I don't know whether to take 17 out of the 72, leaving 55, or out of 73, leaving 56, or take some other number as the number of entirely healthy colonies to which credit should be given for the rest of the sections. If we take 55, then the average for the healthy colonies was 277. If we take 56, then the average was 272.1. Even this smaller number is 39.81 more than the average of the diseased colonies. If this difference be wholly due to the disease, then the average of the 72 would have been at least 272.1 instead of 266.47, and a loss of 676 out of the total crop should be charged up against European foulbrood. That may or may not be right, but it certainly looks as if something should be charged up against the disease, even though it was mild. And it is a consoling thought to know that the disease can be so kept down.

DR. BRUNNICH'S QUEEN MARKING TOOL AND MARKS.

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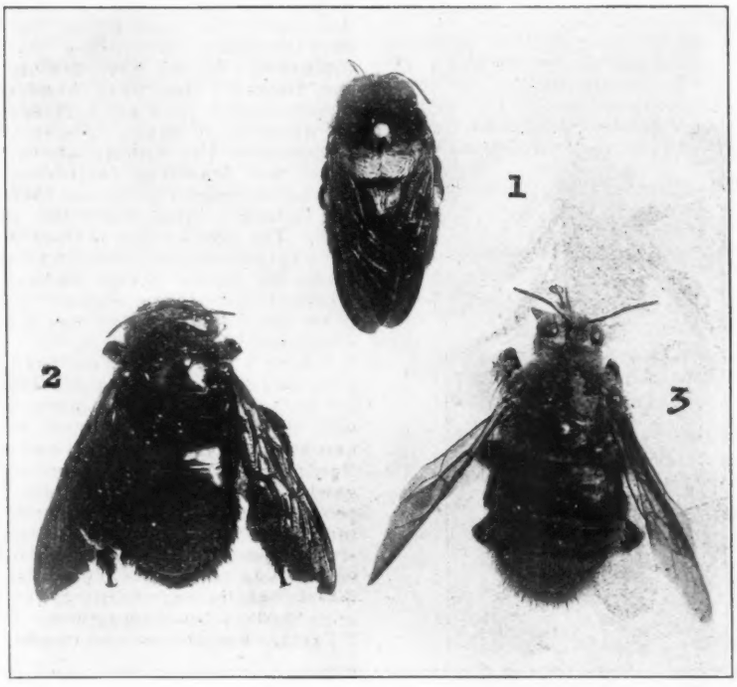

FIG. 2.—Three carpenter bees. 1. Xylocopa caffra, Cape Colony. 2. X. fimbriata Nicaragua. 3. X. conjuncta, Africa.

Three of the diseased colonies gave respectively 305, 326, and 336 sections. The poorest gave 112 sections. The poorest of the healthy colonies gave 68 sections, showing that there are worse things than foulbrood. In this case I think it was "pure cussedness." Number 39 began by killing its own queen the last of May, and killed everything in the line of a queen given to it up to Sept. 1, when it accepted a virgin. I used the politest and best forms of introduction I knew, including Arthur C. Miller's smoke plan, but all was no use.

Marengo, Ill.

Our Wild Bees

BY JOHN H. LOVELL.

FEW beekeepers know much about our wild bees, yet they play a most important part in the pollination of both wild and cultivated plants, the pollen and nectar of which our domestic bees are compelled to share with them. Our younger beekeepers, both boys and girls, would find it well worth their while to collect and study the wild species of their neighborhood. By exchanging and corresponding with each other this work might be made intensely interesting; and much practical information would be obtained. When Darwin was at Good Success Bay, Terra del Fuego, he wrote home that he thought he could not employ his life better than by adding a little to Natural Science. But it is not necessary to go to the antipodes for this purpose; you can find an ample field for investigation near your own home, for the wild bees of this country are fairly well known in only a very few localities.

Some 8000 species have been described throughout the world, of which 2000 belong to Europe, and an equal number to North America. There are about 200 species in England, 400 in Germany, while in the warmer climate of Algeria there are 413. In southern Maine there are not far from 135 species, while Hamilton, Ill., the home of the American Bee Journal, could probably furnish 250 species. The wild bees of the southern States are almost wholly unknown, and the information available in regard to the bee fauna of many northern States is exceedingly scanty.

The wild bees are now classified into families, in the same manner as plants, but for the purpose of this journal we shall follow an older division of them into two great series called the long-tongued bees and the short-tongued bees. The latter is the older group, and as flowers with the nectar deeply concealed were gradually developed, the long-tongued bees were evolved *pari passu* (with equal pace).

Of our native long-tongued bees no genus is more familiar to every one than the bumblebees. They are sometimes called humblebees, but their cheerful boom well deserves the sonorous term Bombus or bumblebee. The common American bumblebee (Bombus americanorum, Fig. 1) has a tongue 14 millimeters long, or more than twice as long as that of the honey-bee (6 mm.). The following lines by Emerson well describe the economy of species:

"Hot midsummer's petted crone,
Sweet to me thy drowsy tone
Tells of countless summer hours,
Long days and solid banks of flowers.

Wiser far than human seer,
Yellow-breeched philosopher!

When the fierce northwestern blast
Cools sea and land so far and fast,
Thou already slumberest deep;
Woe and want thou canst outsleep."

There are many flowers which are adapted to pollination by bumblebees, and are hence called bumblebee flowers. This is true of no other genus of bees. Common bumblebee flowers in gardens are the columbines, larkspurs, monkshoods and snapdragons; while the turtlehead, butter and eggs, gentian and red clover flourish in the meadows. I once placed several flower-clusters of white turtlehead about 4 feet in front of a bee-hive; the honey-bees ignored the flowers entirely, but presently the bumblebees found them and one of them visited every flower.

Bumblebees are social insects during the warmer half of the year, but only the impregnated queens survive the winter and are on the wing in the spring. All of the other wild bees indigenous to the northern States are solitary insects; each female, as a rule, constructing her own nest and stock-

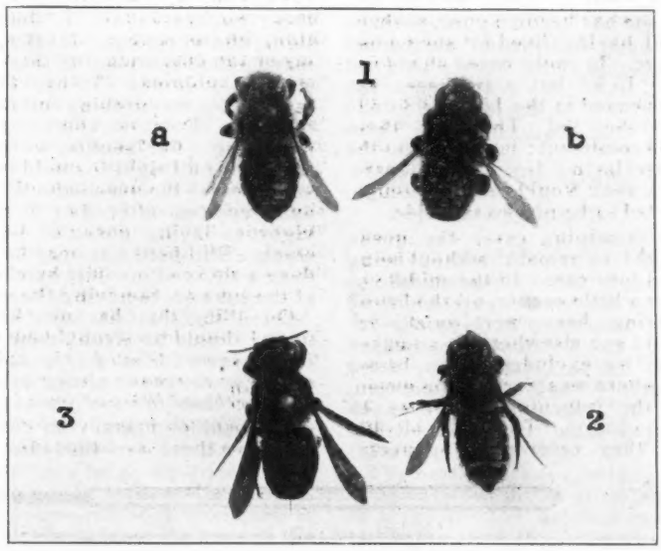

FIG. 3.—Leaf-cutting bees. 1. Megachile latimanus; *a*, female; *b*, male, New England. 2. M. vidua, female, New England. 3. M. atriceps, female, Cuba.

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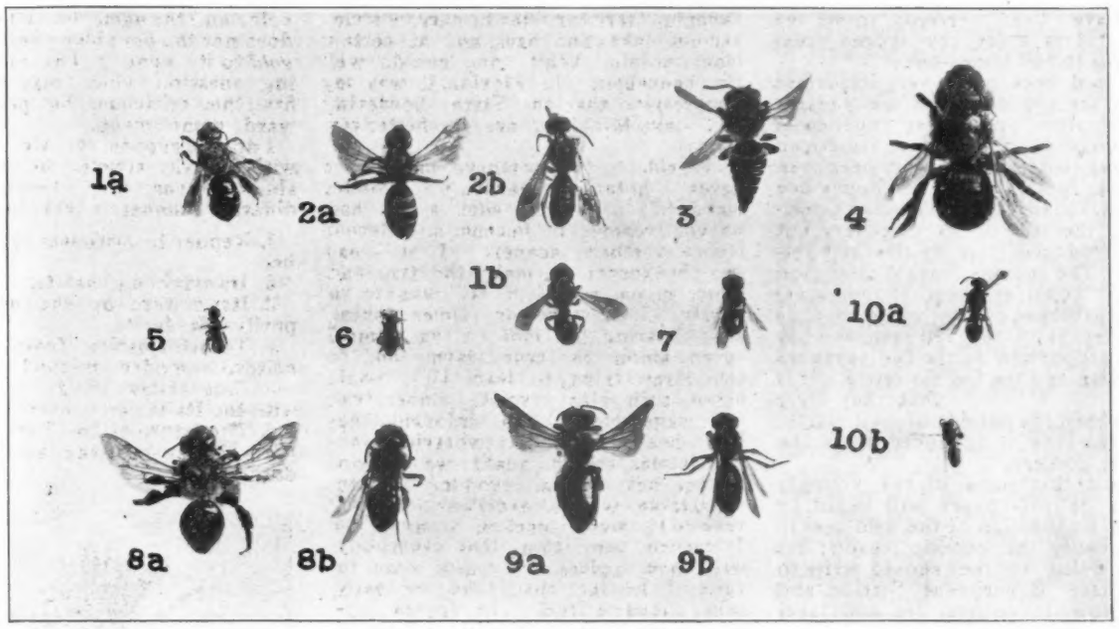

FIG. 4.—Common bees of the northern States. 1. Halictus craterus; *a*, female; *b*, male. 2. H. lerouxii; *a*, female; *b*, male. 3. Coelioxys rufitarsis, female. 4. Osmia megacephala, female. 5. Halictus hortensis, female. 6 H. vierecki, female. 7. Osmia pumila, female. 8. Andrena vicina; *a*, female; *b*, male, 9. A. cratægi; *a*, female; *b*, female. 10. Prosopis modesta; *a*, female; *b*, male.

ing it with food. The largest of all bees are the carpenter bees (Fig. 3), so-called because they are able with their powerful jaws to excavate tunnels in solid wood a foot in length. The cells are separated by partitions of small chips cemented together in a spiral; while the masses of bee-bread, or balls of pollen mixed with nectar on which the eggs are laid are about the size of a bean. In the eastern States Xylocopa virginica, a black bee about the size of X. caffra (Fig. 3, 1), is a well known species.

In Fig. 3 are shown three kinds of leaf-cutting bees. They carry pollen chiefly on a stiff brush of hairs on the underside of the abdomen, which in different species is black, yellow, or glistening white. On level-topped flowers, like the sunflower, they are able to suck nectar and brush up pollen at the same time. They are also especially well adapted to pollinate the flowers of the pea or legume family (Leguminosæ).

The species of Megachile are called leaf-cutting bees because they line their burrows with oblong or round pieces of leaves or flower petals, which they cut out with their mandibles. Usually they do little harm to the foliage of plants, but occasionally the injury is more serious. A settler at Springfield, Idaho, relates the following experience:

"Among the first trees set out about our house were two ash trees. As soon as the foliage began to appear the trees were attacked by leaf-cutter bees, which completely defoliated one and nearly the other. First, we noticed circular holes in many of the leaves, but it was not long, until going to the trees, one noticed the noise made by the bees at work, almost like a swarm of bees intent on gathering honey. Sometimes we could see a bee with a section of leaf so large it could hardly fly, but working diligently, carrying its burden to a sandy spot just outside the yard, where the bees had their tunnels."

The mason bees belong to the genus Osmia (See Fig. 4, 4 and 7), and are closely allied to the leaf-cutters. They are robust, blue-green or bottle-green insects, with the pollen brush on the underside of the abdomen. They are called mason bees because many of them construct their cells of mud or clay. A cell sent to me from Massachusetts, was a round ball about half an inch in diameter, rudely fashioned of mud on the outside, but beautifully polished and glazed within.

The short-tongued bees are very numerous, and may be taken by the dozen on flowers which have the nectar and pollen unprotected, as the willows, plums, wild cherries, thornbushes, blackberries and sumacs. In Fig. 4 are shown common species of the great genera Andrena and Halictus. As they build their nests in the soil of fields and pastures they are often called ground bees. Each female digs her own burrow, and, as many thousand sometimes tunnel in the same sandy bank, the ground appears as though filled with shot holes. It is a village or "city of homes." The tunnel is straight with several short branches, in each of which a ball of bee-bread about the size of a small pea is placed, an egg is laid upon it, the cell is sealed and the offspring are then left to take care of themselves. When it is rainy the females remain at home, and may be seen looking out of the burrows watching for fair weather. A part of the species of Andrena fly only in the spring, and others only in late summer or autumn. Many of them are found on only one kind of flower, some very common species like the willows or goldenrods, which furnish all the pollen and nectar they require.

The simplest and most primitive bees belong to the genus Prosopis (Fig. 4; 10, *a* and *b*). They are little coal-black insects with an aromatic odor, resembling ants in general appearance. They are nearly smooth, with broad, flat, wasp-like tongues, which suggests that

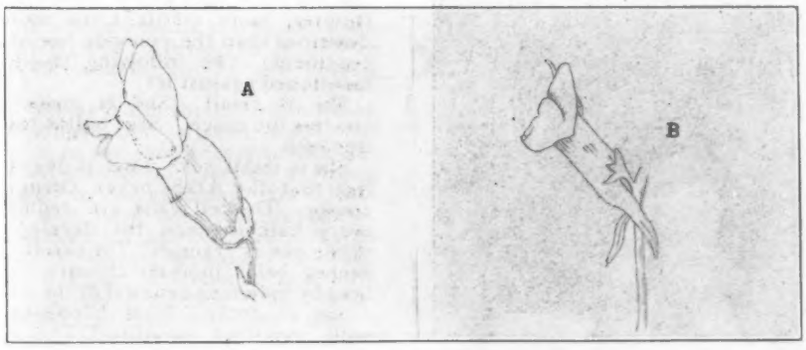

FIG. 5.—Two closed bumblebee flowers. *A*. Snapdragon (Antirrhinum majus). *B*. Butter and-eggs (Linaria vulgaris). In both species the corolla is two-lipped. Notice how the closed corolla protects both the nectar and the pollen from wet and useless insects. Bumblebees alone can push down the lower lip and enter the corolla.

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they have been derived from the wasps. It is a far cry indeed from Prosopis to the honey-bee.

The wild bees play a very important part in the pollination of many plants both in nature and under cultivation. For thousands of years our American flora was visited by no other bees than the wild species; for the honey-bee was not found in the Western Continent at the time of its discovery, but was introduced later by the early settlers. "The Indians," says Washington Irving, "consider them (honey-bees) as the harbinger of the white man, as the buffalo is of the red man, and say that in proportion as the bee advances the Indian and the buffalo retire. It is said * * * that they have always been the heralds of civilization, preceding it as it advanced from the Atlantic borders."

(I trust that some of the younger readers of this paper will begin by making a collection of the wild bees in their locality the coming season; but before doing so they should write to their State Experiment Station and learn how to collect, pin and label their specimens).

Waldoboro, Maine.

My Florida Visit

BY HARRY LATHROP.

BEFORE leaving for Florida, I had written Mr. Wilder to look out for a camping place for me and a few old tin cans, as I would be only "a tin can tourist." It was with much disappointment that I learned, on my arrival at Bradentown, that Mr. Wilder had gone to his headquarters in Georgia on account of the death of his general foreman. I did not see him at all. Attached is a picture of my camp. Perhaps he can tell where it is? I had several informal visits with A. I. Root; also met Ernest when he was down. Herbert Clute, whom I knew when he had an apiary at Greenwood, Wis., lives at Palmetto, where he is doing well with about 300 colonies of bees. I had a nice visit with him and his good wife. Herbert has traveled over every part of the State. He says the beekeeping territory lies in narrow strips around lakes and bays, and at certain local points. While one can do well in beekeeping in Florida, it was my impression that the States bordering on Lake Michigan are far better territory.

Florida, to the northern man, is a great botanical garden, a wonder land full of beauty, such as he had never dreamed of because so different from northern scenery. It will pay any beekeeper to make the trip, and once he has seen it he will want to go again. I had some nice times fishing and boating, but most of the time I spent among the truck farms and in the forest, trying to learn all I could about soils, plant growth, timber, fruit and vegetables. I was informed they had been picking strawberries since Christmas, and the quality was as good as the best we can produce. All the vegetables were of excellent quality. I reveled in sweet, luscious oranges; but I learned one thing, that everybody will have apples. I bought some in spite of the fact that I had so many other kinds of fruit. The apples supplied were from the far distant State of Washington. It would appear that some of the central States could do as well producing apples to supply these markets as the Florida growers do in citrus fruits. Go where you will, the apple is the king of all fruits.

We arrived back home April 1, and found the bees in good condition in the cellar. It was on my arrival at home that I learned of the death of F. B. Cavanagh. It gave me a sad heart. While we did not agree as to the price of honey, I loved him from the first time I saw him, and esteemed him highly. He was an honor to the industry of beekeeping, and will be missed at our gatherings.

Bridgeport, Wis.

HARRY LATHROP IN CAMP IN FLORIDA.

Tunis or Punic Bees?

BY A. LENOEL.

IT is a rash enterprise to fight fashion, whether in ladies' hats, horses or honey-bees. The *golden* bee is fashionable. That is a fact. It has the color and the name, but, all considered, does not the pure black bee bring more *gold* to its owner? That is an interesting question which may bring jests first, then criticisms, but perhaps afterwards compliments.

I do not propose to tire the reader with lengthy articles, but hope to be able to discuss the following points in different numbers of this journal:

1. Replies to criticism of the Punic bee.
2. Its origin and habits.
3. Its culture by the natives. Its purity. Its faults.
4. Transformation from the native culture to modern methods.
5. Comparative study of the race with the Italian and others.
6. The future of the Punic bee as regards honey, beeswax and queen production.

TRANSPORTING ARABIAN HIVES OF BEES IN TUNIS.

The Punic bee is the common black bee. But living in a country where it has not been subject to mismating, it is purer, more resistant, and more industrious than the common bee of the continent. The following faults are mentioned against it:

She is small. She is cross. She swarms too much. She builds too little comb.

She is small, yes. That is due to the fact that the Arabs never change her combs. The cell walls are reduced at every hatching, and the development of the bee is cramped. The careful beekeeper helps increase the size of his bees by judicious renewal of the combs.

She is cross. That happens only with unskillful handling. The Arab, three-fourths naked, works with his bees without care and without accidents; the apiaries of the settlers are usually located near the door of the

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QUEEN-REARING APIARY OF MR. LENOEL, IN MABEUL, TUNIS.

home; the bees make much noise, but give trouble to neither man nor beast.

She swarms too much. That is because the hives are both too shallow and too narrow. They swarm because they are too numerous for their abode. They multiply very fast.

She builds too little comb. If she really swarms too much it is evident that she must build combs rapidly, for the one cannot go without the other. It is easy to find fault. But I hope, in the last of my articles, to show her good points. Meanwhile, I trust the readers will peruse in an impartial spirit what I will have to say further upon this important question.

Nabeul, Tunis.

[Mr. Lenoel, the writer of the above, comes to us well recommended. It is a hard task to fight for an already condemned cause. We bespeak for him courteous consideration.—EDITOR.]

String Splints

BY DR. A. F. BONNEY.

I AM NOT surprised that Dr. Miller makes some guesses (page 161) about my string splints, but I am that he should pass on the matter without a trial, and I trust the Editor of the Old Reliable will let me have a final say.

Dr. Miller is not the only one whom splints have not satisfied entirely. I have yet to see the beekeeper who was satisfied with them, and I am sarcastic enough to suggest that Dr. Miller might not have been had he not invented them. I know *I* have clung to awkward things because I invented them; but I am a stubborn sort of a brute, to say the least. The Doctor confesses that sometimes they "make a gap of an inch or so in the foundation." With five splints, as I have strings, there would be little foundation or comb left.

Note that the splint is imbedded in the foundation while the string merely lays in contact with it, or barely touches it. Whether the splint is boiled in wax or not the bees often try to take it away. The few splints I used were fine broom straws straightened by soaking, then weighted at one end and dried. I also split bamboo, which gave a hard, tough fiber not much larger than a thread. This idea I got from Mr. Edison's electric light filament experiments.

Dr. Miller is a good guesser. I do not know how much the fuzziness of the string was resented by the bees, but the string was removed *before* the foundation was fully drawn out, as I *expected* it to be. However, it had supported the foundation until enough comb had been built to keep it in place.

The strings were saturated with wax. How could they help being when melted wax was poured over them? A cheap string is better than one made of long staple cotton, as it is easier to remove.

A thing must not be condemned without trial. These string "splints," let me explain, are used *as a temporary support*. My frames are wired for permanent support. While "actual trial *may* show less trouble with strings than imagined," it may also show that it is an ideal way to support combs. I find it so. There is no gnawing away of foundation. The closest scrutiny fails to show that the comb had been artificially supported. I expect this season to try a hundred new frames with strings alone. If they fail me I shall make chunk honey out of the combs.

The careful experimenter this summer will put a frame in the hive with medium foundation, one with light, two more with wires, two with strings, and two more with both wires and strings, and keep the hive hot. But not one person in a hundred can carry an experiment to a logical conclusion. Dr. Miller can, and I can—sometimes.

Buck Grove, Iowa.

No. 3.—Doubling the Yield of Surplus Honey

BY G. C. GREINER.

THE success of the season's campaign depends in a great measure upon spring management. It paves the way, as we might say, for future operations. Some of the advantages of my method, outside of heavier yield, are directly due to the preparations and treatments our bees receive before the honey-flows are expected. A description of my method would not be complete without a description of preparing them for the harvest. I will, therefore, give a few stray thoughts concerning my spring management.

To produce doubled and trebled yields, your first aim must be to control swarming. (This is one of the inci-

A TUNIS ARABIAN APIARY. THE HIVES ARE COVERED WITH GRASS AND REEDS. Photograph of A. Lenoel.

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dental advantages my method brings about.) We all know, if bees do not swarm and apply all their energy to the production of surplus honey, the yields under favorable conditions may be enormous. At the same time, if we can keep our bees busy, gathering and storing honey, not capping, they are not liable to swarm. These two features are so closely linked together that either one may be considered the cause of the other.

My apiary, after the bees are placed on the summer stands, usually consists of these three classes: Prime, medium and weak, and I believe the same is the case with every lot of bees at this time of the year. The only difference that may exist is the proportion of the three classes. With one beekeeper, who has the wintering problem at his fingers' end, the first kind may be in evidence, while with a less fortunate brother, the other end of the line may be predominating, but in either case the three kinds are there just the same.

All the colonies that are strong in bees, and have six or more combs of solid brood are classed "prime." Any of these are liable to swarm during the latter part of May. To prevent it they are divided during apple-tree bloom (in this locality about May 10 or 12), the queenless half being provided with a laying queen. In the way of making these divisions, I have nothing new to offer. I practice the old-fashion method of taking the old queen with two combs of brood from the mother colony, place them in a new hive on the old stand, and move the former with a caged laying queen to a new stand. If the operation is properly performed it is the simplest, most convenient, and most workmanlike method of making artificial divisions. The advantages of doing it at this early period are easily explained. No other apiary work is crowding. The beekeeper has plenty of time to execute every detail with care and forethought, while a month or two later the same work would necessarily have to be slighted. The divided colonies, too, have plenty of time to recuperate. Each half has the opportunity to build up to proper working condition before the white-clover flow begins.

I have no trouble with swarming. I am relieved of all the time-wasting useless operations in the line of hunting and destroying queen-cells, clipping queens' wings, which I imagine is the cause of many queens being injured, shook swarming, in itself an unpleasant job, greatly interfering with super work, etc. All these manipulations are pulling at the wrong end of the rope. Instead of removing the cause, they are expected to prevent the effect. It is not the presence of queen-cells, but the disposition to build them, that induces swarming. Cutting them out does no more remove the desire to swarm than clipping the queens' wings.

At the time the divisions are made, all vacant space in the hives is taken up by chaff division-boards, dummies, fillers, or whatever they may be called. The hives that contain the old queens are reduced to five frames; one comb of honey and two empty combs being added to the two combs of brood taken from the mother colonies. The space of the two combs taken from the latter is also taken up in the same way. To make these changes convenient, the division-boards I use conform to my rule of uniformity. Shorter in length, they are cushioned at the ends to fit against the end boards of the hives; but in thickness they take up the same space as the brood-frames, so that eight, the number of frames I use, just fill the hive. Whenever it is desirable to change from one to the other, the same number of one will fill the space of any number of the other.

As soon as the old queen has started brood-rearing in the two empty combs, I exchange one of the division-boards for an empty comb, the latter being placed in the center of the brood-nest. A little later, according to the progress of brood in this added comb, another division-board is exchanged in like manner, and still later the third one is exchanged. With a vigorous healthy queen (we should have no other), this treatment results as a rule in a hive full of brood and bees by the time the white-clover flow begins, and if bees are then supplied with the necessary empty combs (extracting supers), we can expect rapid storing.

The removed mother colonies are treated practically in the same way. The spaces of the two combs of brood taken with the queen are taken up by division-boards, which are placed on the outside of the remaining combs. It takes a little longer before the introduced queens are accepted and laying, but whenever this takes place, the changes are made, the same as with the other colonies. From these colonies the comb-honey producers are selected; having all young queens, they are less liable to swarm.

As soon as the season permits, the other two classes, medium and weak, are reduced to as few combs as they can occupy to advantage. With the advancing season, and according to their progress, the former are served in the same way as the divided halves of the prime colonies, and as a rule, they are in fine shape for surplus work, when the flow begins. If any are a little slow to take their supers, the equalizing method, as described before, brings them up to the desired condition. Many of these colonies produce as much surplus honey as any of the divided ones; in fact, they frequently excel some of the less ambitious ones of the latter.

The third class, the weak ones, I consider of little account. Although I nurse them up as their condition may dictate, I do not spend a great deal of time with them. I generally unite the better ones, those that promise any returns at all, when the flow is on, or, for experimental purposes, exchange them with some of the mediums during the forepart of the season. Uncertain and unprofitable as these efforts may seem at the beginning, I frequently take surprising yields from these invalids before the season is over.

Since writing the foregoing it occurred to me that a brief detail of making artificial divisions as I practice it, might be a help to some young beekeeping friend who would like to try my method.

First, some general rules: Handle bees very quietly and slowly, and prevent all cracking and snapping as much as possible, when manipulating a hive. It is the jarring and quick motion that irritates the bees. There is no such thing as cross bees or cross strains in my experience except in very rare cases. Rough and careless handling will turn the most gentle bees into furies.

Always have your smoker ready for action within easy reach, but use as little smoke as possible.

Be master of the situation at all times. Never allow your bees to become uneasy. A very few puffs of smoke over (not between) the frames will keep them quiet, if administered at the right time.

Shaking bees on the ground in front of the hive removes all their disposition to fight. The same holds good after a comb is taken out of the hive. It can be leisurely examined without any objection on the part of the adhering bees.

Use a bee-veil or have one on your hat ready to use. Although I have not used one in 5 or 10 years, I would advise the beginner not to be without it. Its use produces a certain feeling of safety that greatly assists in quietly handling our pets, especially when queens are dealt with.

Prepare a new hive with three division-boards and two empty combs, leaving space for three combs in the center. Place it behind the colony to be divided. Loosen the cover of the latter on your side very carefully. If bees emerge, a little smoke will drive them back, and the cover may be replaced for a few seconds to let the bees get quiêt again. Take off the cover in a slow, quiet way and give it an endwise jar on the ground, close to the hive-entrance to drop the adhering bees. With hive-tool (pocket screwdriver) loosen and move the third frame towards the center as much as bee-space will permit without squeezing the bees. Serve second frame in like manner. This will give the first comb plenty of room to be taken out without rolling bees against the adjoining comb. Look it over carefully for the queen. If the operation is performed during the middle of the day, she may be on this very comb. In either case place it in the new hive next the division-board. Take out the second comb and look it over like the first.

If the queen is not on this comb, and it contains mostly young, uncapped brood, place it as second comb in the new hive also, otherwise let it take the place of the first comb taken from the mother colony. Take out and examine the third and all the following combs until the queen is found, when she is placed with the comb and adhering bees into the new hive, and the latter closed. In case the second comb remained in the old hive another comb of brood, preferably young brood, must be transferred to the new hive.

All the remaining combs in the mother colony should be moved to one side, allowing a little more than bee-space in the center for the suspension of the cage containing the queen to be introduced, and the vacant space filled out by two division-boards and one comb of honey. The latter to replace the first one taken out which generally

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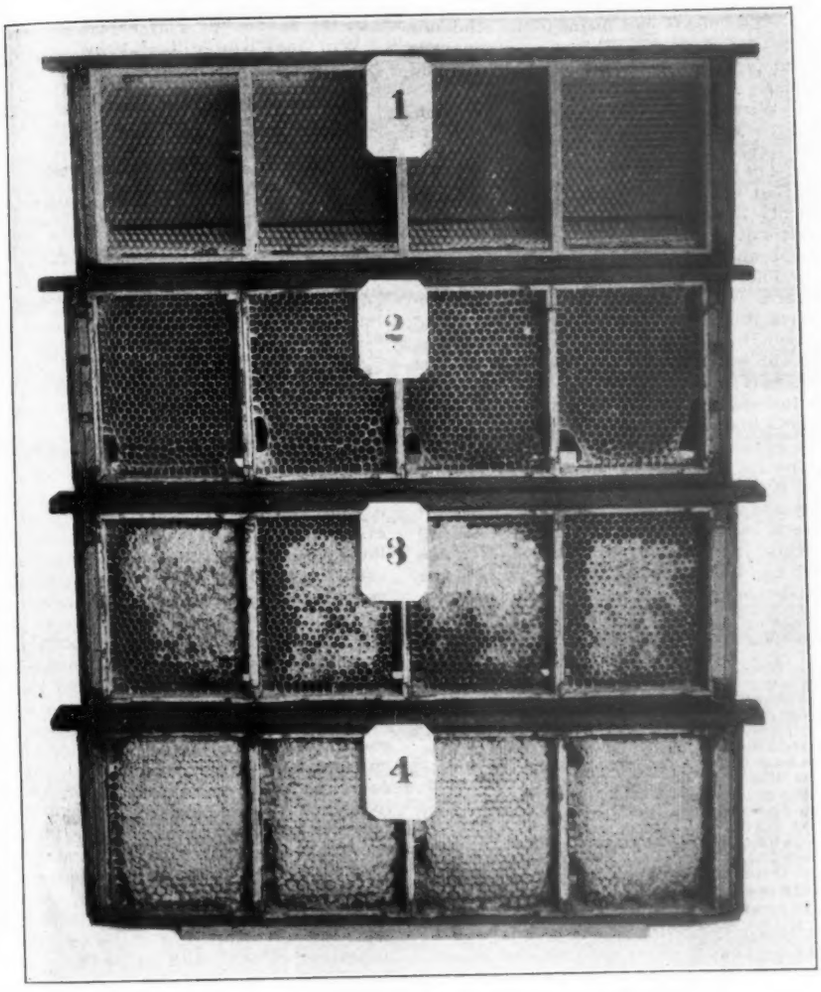
contains mostly honey. The cage with the new queen should be suspended 2 or 3 inches below the top-bar. A little wire-loop with ends turned at right angles to catch the top-bar will do this very conveniently. The pasteboard cover over the hole to the candy-supply must be replaced by tin or a wooden plug for two days, when this protection may be removed and the bees allowed to liberate the queen by gnawing out the candy. At the same time all combs of brood must be carefully examined, and all started queen-cells destroyed. For the same purpose I examine every hive daily, until the queen is accepted.

Occasionally it happens that I find a queen liberated and balled on the third day. In this case I disperse the troubling bees with a few puffs of smoke and re-cage her for another 24 hours, after which she is generally accepted. My home-made wire cages are more convenient for re-caging than the mailing cages of the trade.

La Salle, N. Y.



SECTIONS IN THE FOUR STAGES—PHOTOGRAPH BY G. C. GREINER.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Transferring—Increasing—Requeening

1. I wish to transfer from old hives to good ones. When is the best time and what is the best way to do the job?

2. Is this a good time to feed bees, and how is the best way to do it?

3. I have a double-walled hive, and wish to know the best way to stock it with bees. Shall I wait for a new swarm or take frames out of some of the hives I speak of that need repairing?

4. Would it be best to buy a nucleus and a queen or bees by the pound?

5. I have 13 colonies, and would like to have them put off one swarm each for increase. How can I govern them so as not to have more than one?

6. Would it be safe to feed now with a Boardman entrance feeder without startin robbing?

7. I have never introduced new queens, but have the same ones I begun with two or three years ago. Do you think I should introduce new ones, and when?

8. Is it necessary for frames to be wired?

INDIANA.

ANSWERS.—1. On any one day when bees are flying freely it is a simple matter, supposing your hives are all alike, to lift the frames successively out of a hive that needs repairing and put them into another hive that is in good order. If you have not enough hives in good order to accommodate all, go as far as you can, then put in order the hives you have emptied and fill them on a snccceding day.

2. Any time is a good time to feed bees if there is any danger of starving. It is also well, even if there is no immediate danger of starving, to see that they have abundance to last until harvest and a little over. Of course, it will not do to have the frames so filled that the queen has no room to lay, but there is not much danger of that, for when brood-rearing gets well under way it is surprising how rapidly the honey is consumed in preparing food for the babies. The very best way to feed is to give frames of sealed honey. Likely you haven't any, but now is a good time to make a mental resolve that you *will* have some in readiness for next spring. The best way to feed these heavy combs in early spring is to put one in each hive under the bottom-bars. This is easily done if you have bottom-boards with a space 2 inches deep. If you have no such deep bottom-board, then you must open the hive and put in the frame of honey, then use sugar syrup, half sugar and half water, feeding it in a Doolittle, Miller, Boardman or other feeder.

3. If the frames are of the right size, change the contents of one of the old hives into the new one; otherwise wait until you can put a swarm in it.

4. That will be all right if you want to increase that much and want to stand the extra expense.

5. When a colony swarms, hive the swarm and set it in place of the old hive, putting the old hive close beside it, both hives facing the same way. About eight days later move the old hive to a new stand 10 feet or so away. That's all you have to do; the bees will do the rest. When the old hive is moved to a new place, the field bees that go out to forage will go just the same as if they had not been moved, but when they return from the field, instead of returning to the old *hive* they will return to the old *place* and join the swarm. The mother colony being thus bereft of its fielders, and finding no honey coming in, will feel so discouraged that the first virgin emerging will be allowed to destroy all its rivals and there will be no further swarming.

6. There is not much danger if you avoid spilling feed and feed in the evening after bees have stopped flying.

7. The likelihood is that you haven't a single queen that you bought two or three years ago. Bees of their own accord generally supersede their queens every two or three years. So there is no need of introducing new queens unless for the sake of having better stock.

8. Not absolutely necessary, but better, to have the combs strengthened by being supported by wires or foundation splints.

Transferring—Swarming

1. What is the best way to transfer a swarm of bees from an old box-hive which

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is in very bad shape to a new hive, and what is the best time of year?

2. Can I get several colonies from one hive during the summer, without letting the bees swarm? ILLINOIS.

ANSWERS.—1. You can transfer in the usual way during fruit bloom, but perhaps the best is to wait until the colony has swarmed. Then hive the swarm in a proper hive, and 21 days later either transfer the bees from the old hive into a new one, or else break up the old hive and add the bees to the swarm.

2. Yes, if the bees are in a frame hive you can divide the colony into several. One way is to take from the colony two frames of brood with adhering bees and the queen, and put them into a new hive on a new stand. Ten days later you can divide into two or more parts what is left in the old hive, making sure to have a good queen-cell in each part.

Uniting Colonies and Introducing Queen at Same Time

1, I have 2 colonies that are very weak, and want to unite them and introduce an Italian queen at the same time. How is the best way to do it?

2. How would it do when the prime swarm comes off, to kill the queen and put the bees in a swarm box for about 12 hours, and then introduce an Italian queen?

3. Which is the better extracting frame, the ⅞-inch top-bar with two grooves or the ½ inch top bar with one groove for extracted and chunk honey?

4. Which would be the better hive for this country, the 8 or 10 frame?

5. What kind of bees would be the best for this part of the country, and what do you think of southern Oklahoma for honey production? OKLAHOMA.

ANSWERS.—1. Destroy the queen in each hive, and introduce the Italian queen into either hive, just the same as if there were to be no uniting; put a sheet of newspaper over the stronger, if there is any difference, and set the hive over it. All of this you will do at one time. The bees will gnaw through the paper and unite peaceably, and in four or five days you can move all brood from the upper hive into the lower, as also the bees.

2, It would probably work, only the swarm would not be quite so contented with a strange queen.

3. One will probably work as well as the other.

4. Probably the 10-frame.

5, Likely Italians will do as well as any. From all I know, bees should do well there.

Using Swarm Box—Catching Stray Swarms—How Late?

1. How can I use a swarm box as mentioned in "First Lessons in Beekeeping?"

2. Do you think it would help to get more bees if I would put up decoy hives to catch swarms, and how should I put them up and where?

3. Is a swarm worth hiving after the last of May, and how late are they worth saving?

4. Is there any special lumber which should not be in hives?

5. Which is the best way to wire foundation in frames; will the wire bother the bees?

6. Does it harm the bees to put them in newly-painted hives, and does it hurt to paint hives after the bees are in and working?

7. Is there any danger of losing swarms if the hives are in too hot a place? Is it necessary to keep bees in the shade all the time?

8. Is there any special width of foundation to use in a brood-chamber? If I use thin brood foundation, how much can I put in each frame? INDIANA.

ANSWERS.—1. A swarm box being lighter than a hive, instead of carrying the hive to where a swarm is, the box may be taken there, and when the swarm is in the box it can be carried to the hive, laid upon its side with the open part of the box toward the entrance of the hive, so the bees can run from the box into the hive. If they are too slow about it they can be dumped on the ground in front of the hive by jarring the box on the ground.

2. If stray swarms are plenty you would be very likely to catch some in decoy hives. Into an empty hive put one or more empty brood-combs (the blacker the better), and set the hive anywhere outdoors where the bees can have free access to it. That's all.

3. In my locality nearly all swarms issue after the last of May. A good swarm is worth saving no matter how late it comes.

4. Basswood is bad, owing to its tendency to twist and warp. White pine is generally used, and in some places redwood and cedar.

5. Wires are generally stretched horizontally, 4 wires to the frame. The bees are not likely to pay much attention to them.

6. The only harm likely to happen would be that bees might stick to the fresh, soft paint. If you paint a hive with bees in it, better do it in the evening after bees stop flying, and use drier in the paint.

7. There is great danger that a newly-hived swarm will desert if its hive is too hot. After it becomes settled and has started brood, the danger disappears, and a colony may do well without any shade. Yet in most places it is better that a hive shall be shaded in the heat of the day. A nice thing is to have a hive under a tree, which shades it in the middle of the day, but allows the sun to shine upon it in the morning and evening.

8. It is well to have the foundation come down to within ⅛-inch of the bottom-bar. It is not absolutely necessary to use full sheets; if you use narrow starters you can still handle the frames, only in that case you will probably have too much drone-comb.

When to Put on Summer Stands—Rearing Queens

1. How soon will it be safe to take out of their winter chaff lined boxes and put on summer stands bees that are in single-walled hives?

2. I understand that the best queens are reared during the swarming season, and that the best time to requeen is after the honey-flow stops, in the fall. How do you keep those queens until fall, and how can those you do not use in the fall be kept over until next spring?

3 The cuts showing how to nail dovetailed hives, nail only every other dovetail. Do you think that is the best way, or should every one be nailed? IOWA.

ANSWERS.—1. It is much the same as taking bees out of cellar. Usually it is well to take bees out of cellar about as soon as soft, or red, maples are in bloom; although this year it turned so cold that my bees were not taken out of cellar until April 13, which was 18 days after the blooming of soft maple. If, however, the bees are not to have their stands changed, and can have a flight without removing any packing, it is better for the bees to have the warmth of the packing until it is fairly hot weather, say about the last of May in your region.

2. "Swarming season," and "fall" sound farther apart than they may be found in actual practice. Swarming season, for instance, in my locality, and perhaps in yours, does not generally begin until about the first week in June, and may continue until August. Good queens may be reared during this time, and indeed so long as a good flow continues, swarm or no swarm. Suppose a colony swarms July 1, and you utilize its queen-cells. From them you will have laying queens perhaps July 15. If the season closes as early as I have known, it will be just as well to requeen July 15 as later. At any rate you will likely have swarms enough later to accommodate you, for it is well to requeen toward the close of harvest rather than to wait until all gathering has ceased. If, however, you have laying queens before you need them, keep them in nuclei until needed. Possibly you may be able to winter them in nuclei, by putting them in cellar.

3. At top and bottom nail at least two consecutive dovetails; it's not so important about the central ones. I have had pretty good success by driving a nail vertically at top, and one at bottom.

Southern Bred Queens

Will bees winter just as well when in a cold climate, reared from a queen bred from a southern strain? PENNSYLVANIA.

ANSWER.—It is considered that there is no difference.

Rearing Queen-Cells—Requeening

Almost all of my bees are blacks, and I want to rear queens from some pure Italians to requeen all the others. There are no drones flying yet, but there is plenty of drone-brood sealed over. After trying the Alexander plan of increase I did not get any queen-cells started, so I set the queen with some brood on a new stand close by and left most of the brood on the old stand, and after five days I did not find any queen-cells started. The bees have plenty of old honey, and there is nectar available, so they do not care for artificial feed. Bees usually swarm here in April; sometimes beginning in March. May is slack of nectar, and the main flow begins late in June. I am prepared by Doolittle's plan to care for cells and hatch them. CALIFORNIA.

ANSWER.—As I understand it, your trouble is that the bees do not start cells at all, even when only a few bees are taken with the queen from a full colony. That is unusual, very. It is possible that the bees are not gathering nectar enough, although from what you say I should hardly think so. Another suggestion is that there is a difference in colonies, some being more inclined to start queen-cells than others, and that if you should try another colony you might have better success. A third thing that may make a difference is the character of the combs. Bees prefer to have holes or inequalities in the combs that give plenty of room for the cells. That which of all things seems to suit them best is a freshly-built comb that only partly fills the frame. Take from your best colony temporarily most or all of its combs, and let them fill a frame half full of comb, with its young brood and eggs, then give this new comb to a strong queenless colony, with or without other brood, and if the bees don't start cells on that virgin comb the case is hopeless.

Wiring Frames—Drone Rearing

1. Is it necessary to use wire in the frames when full sheets of foundation are used in the brood-chamber?

2. If so, how large a piece of foundation would be safe to use in the frames without wire?

3. Doesn't the wire bother the bees in drawing out the comb?

4. At what time do bees begin to rear drones? MICHIGAN.

ANSWERS.—1. Unless you use wire or foundation splints you will be sure to have bulged combs, unless it be in very shallow frames with heavy foundation, and it is cheaper to use wire than very heavy foundation.

2. From 2 to 4 inches ought to work all right, depending upon the thickness of the foundation. But in the long run it is more expensive to use starters than full sheets, for you are sure to have too much drone-

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comb with starters, and it's expensive business to support a lot of useless drones.

3. No, it doesn't seem to; at least they build out the comb the same as if no wire were present, and the cells where the wires are occupied with honey, pollen or brood just the same as if there were no wires.

4. Eggs are likely to be laid in drone-cells as soon as there is a considerable flow, and drones will appear 24 days later.

Lazy Bees—Producing Chunk Honey—Rearing Queens and Drones from Same Colony

1. Last season I had lazy colonies that did not do anything but rear bees. They were running over with bees, but did not swarm nor store any surplus honey. Would it be best to give them another queen?

2. How would it work for chunk honey to put on an extra body of Hoffman brood-frames with brood foundation or would it be better to use section foundation?

3. Would you advise rearing drones and queens from the same mother?

4. Do bees store more honey and quicker in 2 story hives than they would in supers, and do you advise 2-story hives for honey to be sold as chunk honey?

WEST VIRGINIA.

ANSWERS.—1. It is possible that there may have been some excuse for the bees doing nothing, but if other colonies were doing well at the same time the likelihood is that the bees were at fault, in which case it would be well to give a queen of better stock.

2. The thinner foundation would be better for table honey, and yet some have reported that the heavier foundation was thinned down by the bees. It would not be a bad plan to try each, and then you would know better what to do in future.

3. It will be better to rear queens from your very best colony and drones from a few of the next best. Yet if you should try to rear queens and drones both from the same colony it is not certain that much harm would come from it, for the young queens would be likely to meet drones from other colonies, perhaps from a colony a mile or more away.

4. They will probably store as much in one as in the other. Like enough they will start a bit sooner in a super, provided it be shallow. For chunk honey you will probably like something shallower than the brood-combs.

REPORTS AND EXPERIENCES

Two Percent Loss

Bees have wintered finely. The loss was 2 percent out of 100 colonies.

Anthon, Iowa, April 16. G. W NANCE.

Stronger Than Ever

I have kept bees since 1863, and I have never had bees as strong as they are this year. JOHN A. THOMAS.

Mt. Pleasant, Iowa, April 30.

Wintered Better than in 38 Years' Experience

Prospects for the season are very promising. Bees have wintered in better shape than ever experienced in all my beekeeping career of 38 years. G. C. GREINER.

La Salle, N. Y., May 4.

Better Outlook in Vermont

My bees have wintered finely this year. I haven't lost a colony out of 50. I wintered them in the cellar, and set them outside April 2. There was plenty of snow here this last winter. We ought to get some clover honey. We haven't had a clover year for 3 years; basswood hasn't yielded for 2 years. Last year my honey was from raspberries, goldenrod and asters. M. C. YOUNG.

Rutland, Vt., April 8.

A Good Outlook in California

While the old saying is always possible, "There's many a slip 'twixt the cup and the lip," nevertheless it has been nearly 20 years since southern California, in almost all sections, has had such bountiful rains up to this time. Perhaps the rainfall has never been so unevenly distributed, varying all the way from 7½ inches to 35 inches over the sage and wild buckwheat ranges. Almost all beekeepers are very sanguine, and consider the prospects very favorable for at least an average crop of honey. This is for the *unirrigated* sections. L. L. ANDREWS.

Corona, Calif., March 12.

Location is Almost Everything in Beekeeping

We had our bees rented last year down in Wyoming, and by all accounts they gathered the usual amount of honey that they have in the 10 previous years. In regard to Mr. Wilder's article about locations, my experience has taught me that locations are everything in beekeeping. The man who happens to start in the right location is bound to win out. While clover regions are not always reliable. White clover does not furnish honey every year, neither does white sage. If any of the readers of the American Bee Journal are thinking of changing locations, I can, if they write me, tell them where to locate for a sure crop every year without cellaring the bees, and no enemy to annoy them in the least.

Katispell, Mont. J. D. KAUFMAN.

Optimistic Outlook

Our 97 colonies are in the finest shape we ever had bees at this time of year; plenty brood, pollen, stores and bees, and the honey-flow is due in this locality June 20. So we expect to have 97 colonies in extra good shape by that time.

The past winter was very favorable to the bees. We had no long continued cold, so all our colonies came through finely. They were wintered outdoors in chaff hives. We rear all our queens, and never had but one case of foulbrood. It was given treatment promptly, and I have not had a trace of it since, and that was 4 years ago.

GRANT LUZADER.

Pennsboro, W. Va., April 16.

The Market for Honey in France

Trade reports based on statistics, and written without a special knowledge of the article in question, are apt to lead to wrong conclusions. The American trade would experience a disillusion if it based its calculations on the prices given in the report under this heading, on page 80.

The price of 150 francs ($28.85) I do not think has ever been reached. After 2 years of failure, the highest price reached last year was 135 francs per 100 kilos, 12 cents per pound. In average years the price ranges between 90 and 110 francs, 8 and 10 cents per pound.

Now, if it came to furnishing an indifferent kind of honey at these prices, even with a duty of $1.75 per 100 pounds, America might make attractive offers to the French trade, but competition is absolutely barred for the simple reason—and this was omitted in your consular report—that these quotations are for a special kind of honey, which *the United States do not furnish*, and required by the trade and the French public, that will only take that particular honey for table use. It is just as in England, where more than double the price paid for your most appreciated honey is paid for the domestic Scotch product, although there is no duty on honey. The honey is known in trade as "surfin extra," and is gathered on *Sainfoin*, a smaller part on crimson clover—both plants not cultivated in the United States to an extent worth mentioning.

This honey is nearly water white, very rich, and of a most exquisite taste. Other honey in France does not fetch anything near the price paid for the "surfin extra." In biscuit factories, bakeries, etc., dark honey from Ille-et-Vilaine, Eure-et-Loire, and Morbihan is greatly used. Its quotation at present is 78 francs per 100 kilos, a little less than 7 cents per pound, which can be considered an average price for this honey.

Owing to its strong flavor and its quality of coloring cakes a beautiful dark brown, this honey can be replaced by no other kind, according to the statement of a large German factory that yearly takes 130,000 to 150,000 pounds of it against 960,000 pounds of western honey which is imported directly from Cuba, Domingo, Chili, etc., for the manufacture of cheaper kinds of cake.

Perhaps the greatest honey districts are the "Landes." It is a part of France of which the Editor gave a description in this magazine. The honey there produced is used a great deal in the manufacture of adulterated honey, and for that reason also exported to Germany. It is paid to the beekeeper 5 cents per pound.

As the duty of honey is 1¾ cents, American dealers would have to furnish honey for 3¾ cents free, in France, if they would compete in selling honey to the factories of "miel de fantaisie!" (adulterated honey.)

I will wind up by quoting from a letter of one of the largest dealers in France:

"Foreign honey competes but little with French honey. There is a duty of 20 francs per 100 kilos, which is fully sufficient to protect local production."

C. KNEPPELHOUT.

Driebergen, France, March 24.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 70 Cortland St., New York City.

GOLDEN all-over Queens. Untested, $1.00. Tested, $3.00. Breeders, $5.00 and $10.
2Atf Robert Inghram, Sycamore, Pa.

FOR SALE—Choice Golden Queens that produce Golden bees equal to any.
Wm. S. Barnett, Barnett's, Virginia.

PURE TUNISIAN QUEENS, tested, $1.00; 2-lb. bees with tested queen, $4.00. Safe arrival guaranteed. Lenoel, Nabeul, Tunis.

UNTESTED Queens, 75c each; $7.50 per doz. Nuclei, $1 25 per frame. Bees, $1.50 per pound. Full colonies, 8-frame, $6.50; 10-frame, $7.50.
Stover Apiaries, Mayhew, Miss.

BRITISH GOLDEN QUEENS, Carniolans, leather-colored Italians, tested, $1.50 each. Diseases unknown. William Beck,
Scosthrop Apiary, Bell Busk, via Leeds, Eng.

FOR SALE—Fine Italian Queens. See my large ad. in this issue.
J. F. Archdekin, Rt. 7, St. Joseph, Mo.

1914 QUEENS—Moore's strain of leather-colored Italians. In April at 75c. Bees by the pound and Tested queens. Write us for prices on nuclei. Address,
Ogden Bee & Honey Co., Ogden, Uta

American Bee Journal

ITALIAN QUEENS—Bees by lb. Descriptive List free. Apiaries under State inspection. Leaflets, "How to Introduce Queens," 15c. "How to Increase," 15c; both, 25c. 2Atf
E. E. Mott, Glenwood, Mich.

QUEENS—10 percent discount for orders received before May 1, to be filled in May and June. Tested, $1.00; untested. 75c. Dead ones replaced free. 2Aot
S. Click, Rt. 2, Box 16, Mt. Jackson, Va.

WE WILL be in the field with good Italian Queens in June for $1.00 each; 6 for $5.00. Two-frame nuclei in June without queen, $2.50; with queen, $1.00 extra.
D. J. Blocher, Pearl City, Ill.

PHELPS' Golden Italian Bees are hustlers.

ITALIAN QUEENS, 5-banded, for sale. Ready April 15. Untested queens, 75c each, or $7.25 per dozen. Safe arrival guaranteed.
W. W. Talley, Queen Breeder,
3Atf Rt. 4, Greenville, Ala.

READY after April 20. Good Italian Queens. Tested, $1.00; untested, 75c. Satisfaction guaranteed. G. W. Moon,
1004 Adams St., Little Rock, Ark.

CALIFORNIA ITALIAN QUEENS and bees by the pound for June and later delivery. Booked full until June 1st. Circular and price-list free. Write.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

NORTHERN-REARED Queens of Moore's strain of leather-colored three-banded Italians. After June 15, untested, $1.00; 6 for $5.00; 12 for $9.00.
Ramer & Gluen, Harmony, Minn.

IF YOU need full colonies or nucleus colonies of bees write us for prices on healthy good working stock. Tested Italian queen, $1.25; untested, $1.00; six, $5.00.
I. J. Stringham, 105 Park Pl., New York, N.Y.
Apiaries: Glen Cove, L. I.

QUEENS, improved Red Clover Italians, bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Boyd, Ky.

TRY MURRY'S strain of 3 banded Italians. No better queens at any price. Best stock obtainable. No foulbrood or other disease. Latest up-to-date methods in queen-rearing. Tested, 1 for $.100, 6 for $5.00. Untested, 1 for 70 cts., 6 for $4.00.
H. D. Murry, Queen-Breeder, Mathis, Tex.

THREE-BANDED and Golden Italian queens. Ready March 1. They have been bred for three points, prolificness, gentleness and honey-gathering qualities. Prices, Select Untested, 75c each; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50; Select Tested, $2.00.
Garden City Apiary Co.,
R. R. 3, Box 86, San Jose, Calif.

FOR SALE.—Three-banded Italian Queens. bred from the best honey-gathering strains, that are also hardy and gentle. Untested queens, 75c; six, $1.25; 12, $8.00. Tested, $1.25; 6, $7.00; 12, $12. For select queens, add 25c each to above prices. Breeding queens, $3.00 to $5.00 each. For queens in larger quantities write for prices. Robt. B. Spicer,
Wharton, N. J.

PURE Golden Queens, the best that twelve years can produce. Untested, $1.50 each, Select tested, $3.00 each. Breeders, $5.00 to $50. Send for booklet on "Bees and Diseases." Geo. M. Steele,
30 South 40th St., Philadelphia, Penna.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00: Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

THE BANKSTON Bees and Queens are as good as the best. Golden, Three-band and Carniolan. Tested, $1.00 each; untested, 75c. Queens ready to ship April 15. Bees, per pound, $1.50. Nuclei, per frame, $1.50. Write us for prices on large lots of queens. Try us and be pleased.
Bankston & Lyon, Box 141, Buffalo, Tex.

GOLDEN and 3-banded Italian and Carniolan queens, ready to ship after April 1st. Tested, $1.00; 3 to 6, 95c each; 6 to 12 or more, 90c each. Untested, 75c each; 3 to 6, 70c each; 6 or more, 65c. Bees, per lb., $1.50; Nuclei, per frame, $1.50. C. B. Bankston,
Buffalo, Leon Co., Tex.

DUNN'S Golden Italian queens, bred strictly for business that produce a strong race of honey gatherers. March 1 to Oct. 15. One, mated, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. L. J. Dunn, Queen Breeder,
2Aot Box 337 G, R. R. 6, San Jose, Calif.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

QUIRIN'S Famous improved Italian queens are northern bred and extremely hardy; over 20 years a breeder. Colonies, Nuclei and bees by the pound. Ask for Circular, it will interest you. H. G. Quirin,
The Queen Breeder, Bellevue, Ohio.

QUEENS BRED from Doolittle's best stock. Untested, 60c each; $6.60 per doz; $50 per 100. Same stock of one-year old queens removed from our colonies to prevent swarming, 50c each; $5.40 per doz; $40 per 100. Delivery guaranteed. Nuclei 2-frame, $1.50; 3-frame, $2.00. Add price of above queens wanted. We have a rare bargain of apiary of several hundred colonies of bees for sale on easy terms. Particulars on request.
Spencer Apiaries Co., Nordhoff, Calif.

FAMOUS North Carolina Bred Italian Queens for sale (red clover 3-banders). Honey-gatherers good as the best. Strictly reared from Geo. B. Howe's best breeders; mated with Root's, Moore's, Davis' Select Drones; bees that get the honey. Free from disease. Untested, one, 75c; per doz., $7.50. Select untested, one, $1.00; per doz., $9.00. Tested, one, $1.25. Select tested, $1.50. Extra select tested, $2.00. Breeders, $3.00 and $5.00. H. B. Murray, Liberty, N. C.

GUARANTEED purely mated 3-band Italian queens, J. E. Hand strain, bred for gentle, prolific, honey-gathering, wintering, and long life. State inspector's certificate. Queens by return mail or your money back. Before July 1, select untested, one, $1.00 6, $5.00; tested, one, $1.25; 6, $7.00; select tested, one, $1.75; 6, $9.00. Breeders, $5.00. After July 1, select untested, one 75c; 6, $4.00; 12, $7.00; tested, one, $1.00; 6, $5 00; 12, $9.00. Select tested, one, $1.25; 6, $7.00; 12, $13.00. Breeders, $4.00; 10 percent discount on 30 days' advance orders. Safe delivery guaranteed in Uuited States and Canada. Reference First National Bank.
J. M. Gingerich, Arthur, Ill.

THREE-BANDED Italian Queens. Before July 1st, untested, one, $1.00; 6, $5.00; 12, $9.00. Select untested, one, $1.25; 6, $6.25; 12, $11.
After July 1st, untested, one, 75c; 6, $4.00; 12, $7.00, Select untested, one, $1.00; 6, $5.00, 12. $8.50 One-frame nuclei, 75c; 2-frame. $1.50; 3-frame, $2.25. To each nucleus add price of Queen. Our Queens are reared in a locality where there has never been disease, and reared from strong vigorous colonies. The apiary is under most competent supervision. Safe arrival and satisfaction guaranteed.
Horner Queen & Bee Co., Ltd.,
Youngsville, Pa.

HONEY AND BEESWAX

"NULL'S FAMOUS MELILOTUS HONEY.' Sample for stamp. Null Co., Demopolis, Ala

---

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

FOR SALE— No. 1 white comb, $3.00 per case fancy, $3.25; 24 Danz. sec. to case, and 6 case; to carrier. Wiley A. Latshaw, Carlisle, Ind.

$1000 (one thousand). I will pay the above amount in cash for one pound of honey that is equal to my *Red Ripe* (Harnessed Sunbeams) Honey in digestibility, nutrient, value or flavor. Samples and prices free
C. W. Dayton, Owensmouth, Calif.

SUPPLIES.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

BETTER HIVES FOR LESS MONEY—Bee-keepers' supplies and standard-bred Italian bees. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

THE A. I. ROOT COMPANY'S Canadian House. Dadant's Foundation. Poultry, Supplies, Seeds. Write for catalog.
The Chas. E. Hopper Co.,
185 Wright Ave., Toronto, Ont.

THE NATIONAL Beekeepers' Association now buy supplies for their members. Send us your order, enclosing the same money you have to pay others, and we will buy them for you on the co-operative plan. If not a member we reserve the right to retain $1.50 from the profits on your first order to pay your membership dues and subscription to the Review one year. Sample copy of the Review free. Address,
National Beekeepers' Ass'n., Northstar, Mich

FOR SALE.—300 8-fr. supers in flat with fence separators and section holders, fitted for plain sections, 4¼x4¼x1½, with super springs, each.....$ 30 cts.

250 of above set up and painted.....	35	"
250 10-fr. like above, set up, painted	40	"
300 wood-zinc queen-excluders, 14x20	12½	"
200 " " 16x20	15	"
20 chaff division-boards, nailed....	15	"
1 comb bucket.....	75	"
10 supers for Imp. Lang.-Simp. hives	20	"
25 Miller feeders, with super for 8-fr. nailed and painted.....	35	"
50 Porter bee-escapes, with board, painted, for 8-fr. hives.....	30	"
50 Porter bee-escapes, with board, painted, for 10-fr. hives.....	35	"
30 full depth 8-fr. hive bodies with full drawn combs, 8 in hive, each	1.50	"
50 10-fr. hive bodies with 10 Hoff'n frames set up and painted, each	50	"

COPY OF CERTIFICATE OF INSPECTION.

REDWOOD FALLS, MINN., May 6, 1914.

This is to certify that I have this day inspected the apiary of Mr. F. A. Gray, and found no evidence of any contagious disease.
J. A. Holmberg,
State Inspector of Apiaries.

All of the above supplies will be sold in lots to suit. All of the above supplies except those in flat have been used, but are in fine condition. F. A. GRAY, Redwood Falls, Minn.

FOR SALE

FOR SALE—22 1½-story Danzenbaker hives with brood frames and section holders; practically as good as new, $1.50 (½ of price list). 5 1-story, $1.00. Bees were transferred, combs and frames boiled to melt wax. No disease. Alfred Mottaz, Utica, Ill.

FOR SALE—240 colonies of bees and everything for running three apiaries for extracted honey. Also 120 acres of land in a good location where raspberry, clover, basswood and fall flowers grow. Write for price.
E. S. Frost, Rt. 8, St. Louis, Mich.

MISCELLANEOUS

ORIGINAL and unique honey advertising post cards (photos). Write Dr. Bonney, Buck Grove, Iowa, for samples.

I GOT 100 pounds of comb honey per colony; my neighbors got none. I'll tell you how for 25c. O. N. Baldwin, Baxter, Kan.

MAKE paint without oil cheaply. Best known for bee-hives, barns, coops, etc. Formula, 15c. I. Holmberg,
El Dorado Springs, Mo.

SITUATIONS.

WANTED—A reliable man to work with bees. State age, experience and wages in first letter. Rocky Mountain Bee Co.,
Forsyth, Mont.

American Bee Journal

WANTED TO EXCHANGE—8 and 10 frame Dovetailed hives in flat, Dadant uncappin cans, and other supplies; all new goods Want honey. Stanley Ingalls,
Lenox, Iowa.

THE BEEKEEPERS' REVIEW Clubbing List The Review and American Bee Journal one year $1.50. The Review and Gleanings one year, $1.50. All three for one year only $2.00. Dealers, or those wanting to buy honey, kindly ask for a late number of the Review having a list of 100 producers having honey for sale. Address.
The Beekeepers' Review, Northstar, Mich.

POULTRY

FOR SALE—Single Comb Buff Orpington eggs for hatching, pure bloods; $1.00 per 15 or $5.00 per hundred. Satisfaction Guaranteed.
W. H. Payne, Hamilton, Ill.

Statement of Ownership, Management, Circulation, Etc.,

of the American Bee Journal, published monthly at Hamilton, Illinois, required by the Act of Aug. 24, 1912.

Editor—C. P. Dadant.

Business Manager—M. G. Dadant.

Known bondholders, mortgagees, and other security holders holding one per-cent or more of total amount of bonds, mortgages or securities—None.

C. P. Dadant—Editor.

Sworn to and subscribed before me this 23d day of March, 1914.

[SEAL.] H. M. CUERDEN,
Notary Public.

My Commission expires March 25, 1915.

SAVE YOUR QUEENLESS COLONIES

We can furnish vigorous Tested Queens by **return mail** for $1.00 each. Untested Queens ready April 15. $1.00 for single queen; $9.00 per doz. Three-banded Italians only. No disease, and satisfaction guaranteed.

J. W. K. SHAW & CO.,
Loreauville, Louisiana

ITALIAN QUEENS **NORTHERN BRED** Superior winterers, second to none. My free list explains it all. Untested, $1.00; select tested, $1.50. Bees by the pound or half pound. Plans, "How to Introduce Queens," 15 cents, "How to Increase," 15 cents; both, 25 cents.
E. E. MOTT, Glenwood, Mich.

ARCHDEKIN'S FINE ITALIAN QUEENS

Three-banded. Bred for persistent profitable production of honey. Prolific, hardy, gentle. The bee for pleasure or profit. One customer says, "Your queen soon had her 10 frames running over with bees that are hustlers. No disease. Satisfaction guaranteed. Orders filled promptly. Ready May 20.
Untested, $1.00 each; 6 for 5.50; doz., $10.
Select tested, $2 each.
J. F. Archdekin, R. R. 7, St. Joseph, Mo.

Miller's Strain Italian Queens

By **return** mail after June 5th to 10th or money refunded. Bred from best **RED CLOVER** strains in U. S. In full colonies, from my **SUPERIOR BREEDERS,** northern bred; for business; long tongued; leather color or three-banded; gentle; winter well; hustlers; not inclined to swarm; roll honey in. Untested, 1, $1.00; 6, $5.00; 12, $9.00. Select untested, one, $1.25; 6, $6.00; 12, $11.00. A specialist of 17 years' experience. Safe arrival and satisfaction guaranteed.
J. F. MILLER, - BROOKVILLE, PA.

HONEY AND BEESWAX

CHICAGO, May 18.—The volume of trade is very narrow and consists in dealers buying just a little to have it on hand when inquired for. No longer is there a show made of it on the counters, etc., as in winter months, all of which is a seasonable condition. The fancy grades are not plentiful, and continue to bring from 14@15c per pound, according to the flavor, style and everything else that goes to make a fancy article. Anything off from this grade sells at from 1@3c per pound less with amber grades bringing from 10@12c per pound. Extracted is meeting with practically no demand, and prices are inclined to be easy, especially is this so aside from fancy clover and linden, which, like the comb, is in better demand and more firmly held. Beeswax continues to sell upon arrival at from 33@35c per pound according to color and cleanliness.
R. A. BURNETT & CO.

CINCINNATI, May 17.—It is an effort to make honey sales, and the stock of all grades are heavy for this time of the year. Prices are easier than they were. We note many dealers slashing prices to unload. We are selling fancy comb honey at $3.65 to $3.75 per case wholesale. Extracted amber honey from 5½@6½c a pound. White extracted from 7½@10c a pound, according to quantity and quality purchased. We want beeswax at 32c a pound delivered here.
THE FRED W. MUTH CO.

INDIANAPOLIS, May 17.—Fancy white comb honey is being offered here at 16@17c per pound; amber comb at 14@15c. White clover extracted 9@10c in 5-gallon cans. Much comb is being held here, but at this writing there is very little demand. Extracted is in fair demand. Producers are being paid 32c cash for beeswax or 34c in trade.
WALTER S. POUDER.

BOSTON, May 18.—Fancy and No. 1 white comb, 15@16c per pound. Fancy white extracted in 60-pound cans, 11c per pound. Beeswax, 30c.
BLAKE-LEE COMPANY.

KANSAS CITY, MO., May 15.—Our market is about cleaned up on comb honey—not a case left in the wholesalers' hands, and very little left in the retailers'. Plenty of extracted honey, and the demand is very light.

New comb honey in 24 sections should sell for $3.25 to $3.50 per case for No. 1 quality. We quote extracted, white, at 7½@8c a pound. On beeswax we quote 30c for No. 1, and 25c for No. 2 quality.
C. C. CLEMONS PRODUCE COMPANY.

DENVER, May 16.—We have no more comb honey to offer. Are selling extracted honey in a jobbing way at following prices: White extracted, 8c; light amber, 7c. We pay 32c per pound cash and 34c in trade for clean yellow beeswax delivered here.
THE COLO. HONEY-PRODUCERS' ASS'N.
Frank Rauchfuss, *Mgr.*

LOS ANGELES, May 20.—I beg to advise you that that quotations on honey at present are as follows: Light amber alfalfa, 5½c; light amber sage, 6c; fancy white sage and white orange, 7@8c. Beeswax is in very light supply, and is quoted at 32c.
HAMILTON & MENDRRSON.

NEW YORK, May 19.—As to comb honey, we have nothing new to report. There are quite some off grades of amber still on the market unsold, as there is no demand to speak of for those grades, and it is almost impossible to find buyers.

In regard to extracted, the demand is only fair while arrivals are large, especially from West Indies, and the new crop is beginning to arrive from the southern States. We quote nominally from 58@75c per gallon, according to quality. Beeswax firm at 34@35c
HILDRETH & SEGELKEN.

EASTERN BEEKEEPERS

This is the season when you will need bees or supplies. Our catalog, which is free, will show you how to save money. We have a large stock and can ship promptly.

Italian queens, $1.10.

I. J. STRINGHAM
105 Park Place, New York
APIARIES: Glen Cove, L. I.

"NUTMEG" ITALIAN QUEENS
By return mail.

Write for prices by the hundred

Untested Italian Queen-Bees
OUR STANDARD BRED
6 Queens for $6.00;
3 for $3.50; 1 for $1.25
American Bee Journal, Hamilton, Illinois

American Bee Journal

WANTED Honey!

Extracted and Comb

Will buy or handle on Commission

Beeswax

Will Pay Highest Prices.

Yours very truly,

HILDRETH & SEGELKEN

265-267 Greenwich St., New York, N. Y.

Three-Band Italian Queens For 1914

I will again have for sale, after April 1st, young queens reared from my best Leather-Colored Breeders. You will make sure of improving your stock and securing a crop of honey if you introduce some of these queens. The Leather-Colored Italians are recommended and used by the largest and most progressive bee-men of today.

Untested, $1.00 each; $9.00 per doz., $75 per hundred. Select Tested, $1.50 each.

C. S. ENGLE, Beeville, Bee Co., Texas

3-BAND LONG-TONGUED RED-CLOVER ITALIAN QUEENS

FOR SALE.—My long-tongued Goldens are proving themselves to be the bee to clean Foul Brood. This is why I have such a large trade in Canada. Mr. E. L. Cox, of Jesup, Iowa, introduced 50 of my 3-band queens in Foul-Broody colonies in 1912; and he said the disease was cleaned up where each of those queens was put. They gathered such a large crop of honey in 1912 that he bought 50 more in 1913.

One Untested, 75c; 6, $4.00; 12, $7.50; 25, $13.50; 50, $25.00

Double the above for tested queens. Bees by the pound: One lb., $2.00; 2 lbs., $4.00. One-frame nucleus, $2.00; 2 frame, $3.00; 3-frame, $4.00. To all the above packages add the price of queen. I will begin to send out queens in April.

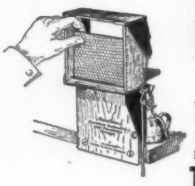
Positively no checks will be accepted. Send money by P. O. Money Orders. All queens arriving dead will be replaced if cage is returned by return mail.

J. B. ALEXANDER, CATO, ARK.

QUEENS Pure leather-colored Italians bred in isolated location; mated to drones of a heavy storing strain; cannot be beat for comb honey; cap white; enter supers readily, with little inclination to swarm.

Queens are reared under best possible conditions. Will begin mailing about June 15th. Get your orders in early, as the greatest rush is always at the opening of the season. Orders promptly filled. Safe delivery and satisfaction guaranteed. Prices: One 85c; 6 for $4.50; per doz., $8.00. No foulbrood. Send for circular.

D. G. LITTLE, HARTLEY, IOWA



Keep More Bees—Better!

A big step toward this goal in the production of Comb Honey, is the use of **the new Rauchfuss Combined Section Press and Foundation Fastener.** Does more and better work than anything on the market. Price, $3.00, delivered anywhere in the United States. Satisfaction guaranteed, or your money back. Send for illustrated circular today, to

The Colorado Honey-Producers' Association 1440 Market St., Denver, Colo.

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee Supplies Now

29 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Missouri

Free BEE BOOK

For Beginners or Old-timers

Lots of good tips on raising those wonderful little money makers in this book—describes our complete line of bee supplies.

Bees Help Pay the Grocery Bill

Little expense, fascinating pastime. Act on good impulse, start right now.

Blanke Mfg. & Supply Co.,

Dept. 1, St. Louis, Missouri

Q-U-E-E-N-S

The Old Reliable 3-Band Stock

My queens are reared from imported stock which makes a beautiful bee. They are fine honey-gatherers, and very gentle. Try my queens. Send me your order, and if not satisfied will return your money. Safe arrival guaranteed. Untested Italian, 1, 75c; 6 $4.25; 12, $8.00.

N. FOREHAND, R. F. D. 2, Brewton, Ala.

Buy Carniolans in Carniola

Pure Carniolan Alpine Bees

Write in English for Booklet and pricelist. Awarded 60 Honors

Johann Strgar, Wittnach

P. O. Wocheiner-Feistritz

Upper - Carniola (Krain), Austria

QUINN'S QUEENS OF QUALITY

Not coming, but are here to stay. Best bee for any climate. Purest of the pure

GREY CAUCASIANS

Bred strictly in the light of **Mendel's Laws of Heredity;** no guess, but positive results. The pioneer **scientific** queen-rearing establishment of America. We lead, others may follow. Every queen guaranteed as to purity of mating.

Special **isolated mating station** on bald open prairie, not a tree within miles—no chance for gypsy drones.

CHAS. W. QUINN

Box 389 - Beaumont, Texas

ITALIAN BEES

Choice Home-bred Queens Reared In strong colonies.

PRICES FOR MAY

Untested Queen	1.25
One Tested Queen	$1.85
" Select Tested	2.40
" Breeder	3.60
" Comb Nucleus—no Queen	$1.50

Safe arrival guaranteed.

For description of each grade of queens send for FREE catalog.

J. L. STRONG,

Clarinda, - - Iowa

Try My Bright ITALIAN QUEENS

This is what one customer writes:—

JOSEPHINE, TEX., June 16, 1913.

MR. M. BATES, Greenville, Ala.

Dear Sir:—I am sending you $9.00 for which please send me 12 Untested Golden Italian Queens. The queens you sent me are fine, and old bee rearers say they are the finest they ever saw. They have surely made a reputation here for you. Several men say they will order queens soon.

A. M. MORRISON.

I have other letters that say the same. Selected Untested, each $1.00; Tested, each $1.50; 2-frame nuclei, each $2.50. I guarantee safe arrival and perfect satisfaction.

M. BATES, Route 4, Greenville, Ala.

LARGEST, BEST

and most complete line of Bee and Poultry Supplies ever seen in Illinois at the lowest living prices. Satisfaction guaranteed or money refunded. Established in 1899. Send for our new catalog. Let us hear from you.

H. S. DUBY & SON, St. Anne, Ill.

American Bee Journal

Gleanings in Bee Culture for 1914.

The Magazine for the Beginner, Back-lotter, and Specialist Beekeeper

For several years we have been doing our best to make GLEANINGS an indispensable publication for the wide-awake beekeeper whether he has but one colony, a small suburban apiary, or a series of out-apiaries numbering hundreds of colonies in all. We believe we have never received such enthusiastic approval of our efforts as we received in 1913, when hundreds of letters from our friends told of their appreciation. We wish that we might print a number of them here, but we prefer to utilize the rest of the space for outlining our plans for 1914. For 1914 we shall continue the special numbers, the feature which has so delighted our readers during the last three years. In deciding just what subjects to take up, we have not selected topics at random, for we have been guided by expressions of the majority.

JANUARY 1—Bees and Poultry.—We think we are safe in saying that no special number that we ever published proved so popular as our February 15th issue for 1912. In getting out another special number devoted to the interests of poultry-raising and beekeeping, we propose to surpass our former efforts and to get together the best material possible on poultry raising from the beekeepers' standpoint.

FEBRUARY—Bees and Fruit.—Our March 15th issue for 1912 has been used far and wide by beekeepers and fruit-growers alike to show the value of bees in large orchards. In the two years that have elapsed, however, so much new material has developed that in order to be entirely up to date it is really necessary to have another special number on the same subject. We have a wealth of material that has never before been given to the public. Extensive fruit-growers, who are not especially interested in *honey*-production, will tell of the value of bees in orchards.

MARCH 1—Beekeeping in Cities.—Probably few beekeepers realize the number of beekeepers there are in every large city. City beekeeping is a most interesting topic, and in addition to stories of beekeeping told by professional men, we shall have discussed various problems connected with bees in attics, or roofs, and in back lots. We also have a *true* story of a beekeeper in a city who was fined $100.00 because his bees were considered a nuisance, and who afterward appealed to a higher court and won out. A good story.

APRIL—Breeding.—Ever since we first began having special numbers there have been requests on the part of a good many of our readers for a special number on breeding. We are glad that we are able to arrange for it this year, for it is a fact that very little is known in regard to breeding bees. Breeding is one of the most important subjects connected with our pursuit. We shall publish special articles by noted queen-breeders on qualifications of breeding queens. Queen-rearing both for the small beekeeper and the specialist will be fully discussed.

JUNE 1—Moving Bees.—We, ourselves, expect to move 300 colonies of bees to Florida, get a good honey crop, double the number of colonies, and move them back again in the spring. Details of moving by boat, wagon, auto-truck, and by rail will be fully described and illustrated, and other large beekeepers having experience along this line have also promised articles for this number.

AUGUST 1—Crop and Market Reports.—There has never yet been a systematic effort put forth for the compiling and publishing of comprehensive crop and market reports from various parts of the country. In 1914 we are going to make the effort of our lives to get telegraph reports from important fields, such as the clover-belt, Texas, Colorado, Idaho, and California, etc. These will be published right along as soon as we get them, but in this August 1st issue we shall have a grand summary of the crop reports and conditions of the market in general. No beekeeper should miss this important number.

SEPTEMBER 1—Wintering.—We have not yet learned all there is to be learned in regard to wintering. A number of specialists are going to make experiments during the winter of 1913–14, which experiments will be published in this number. We shall also give our own experience summed up as to feasibility of wintering northern apiaries in the South.

IS NOT ALL THIS WORTH WHILE?

We have now given you our plan for 1914. If you are now trying to make the most out of your bees, we feel sure you cannot afford to miss such a wealth of information as the subscription price, $1.00, will bring you.

The A. I. ROOT COMPANY, Medina, Ohio

SPECIAL DELIVERY

During this month we shall double our usual efforts in points of delivery and service. We carry nothing but the Root make, which ensures the best quality of every thing. We sell at factory prices, thereby ensuring a uniform rate to every one. The saving on transportation charges from Cincinnati to points south of us will mean quite an item to beekeepers in this territory. We are so located that we can make immediate shipment of any order the day it is received.

New 64-Page Catalog

Our new 1914 catalog contains double the pages of former editions, and requires extra postage. It is filled from cover to to cover with complete lists of goods in every line to meet every requirement of beekeepers. If you haven't received a copy when you read this, be sure to ask for one. It will save you money.

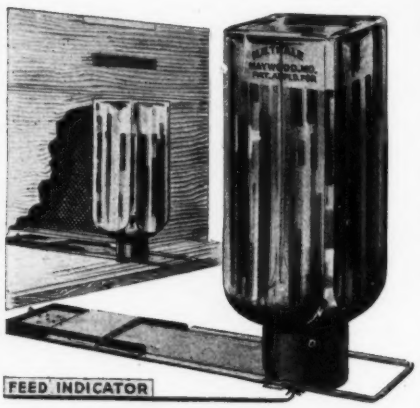
New Features for 1914

Few radical changes have been made this season. It should be noted, however, that we will send out with regular hives, unless otherwise ordered, the metal telescopic or R cover with super cover underneath. The side rail for the bottom-board will be extra length so as to overcome the difficulty experienced by some last season. Improvements have been made in extractors. We shall carry a very heavy stock so orders may be filled with our usual promptness. Write us your needs. Early-order discount this month 2 percent.

C. H. W. WEBER & CO.

CINCINNATI, 2146 Central Avenue, OHIO

American Bee Journal



Thale's Regulative Vacuum Bee-Feeder

Pleases everywhere. Not a dissatisfied customer. Let me double your honey crop by stimulative feeding. Most practical method known. Send 55 cts. in stamps to-day for a sample feeder.

ST. ANNE, ILL., April 14, 1914.
H. H. Thale, Maywood, Mo.—
Dear Sir:—Please send me five more feeders with bottles. I am well pleased with the ten I got some time ago. I don't think that any one will be sorry of their investment, as they are the best feeders I have ever used, and have tried all of them.
Yours truly, C. W. DYON.

SATUS, WASH., May 14, 1914.
H. H. Thale, Maywood, Mo.—
Dear Sir:—Your feeders work perfectly. They are better than any feeder I have ever used. I am using them side by side with other feeders, and like yours the best.
Yours truly, J. A. McCOWAN.

TERMS, CASH WITH ORDER

Sample feeder with two bottles complete, postpaid	$ .55
10 feeders with one bottle for each feeder	3.00
25 " " " " " "	7.50
50 feeders with one bottle for each feeder	15.00
Extra bottles with cork valve each	.10

H. H. THALE, Inventor and Manufacturer **Box A 25, Maywood, Missouri**

Eastern buyers send orders to Earl M. Nichols, Lyonsville, Mass., and B. H. Masters, Edison, Ohio, and Harry W. Martin, New Holland, Pa. Northern buyers send orders to Minnesota Bee-Supply Co., Minneapolis, Minn.

BEES BY RETURN MAIL

Three-band Italians only. Every one knows their good traits for gentleness and honey gathering. They are unsurpassed. Every queen sent out by us guaranteed. **Tested, $1.00 each; Untested, 75c. $8.00 per dozen.**

J. W. K. SHAW & CO., Loreauville, La.
(IBERIA, PA.)

CYPRIAN QUEENS

We have an apiary of pure Cyprians which we have arranged for queen-rearing. Prices, **Untested Queens, $1.00; Select Tested, $2.00**

W. B. DAVIS CO., Aurora, Illinois

Bee-Supplies

LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

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HONEY CANS

All Styles—All Sizes

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BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. The **CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

Beekeepers' Supplies and Fruit Packages

We manufacture the famous Sheboygan Hive, which always gives absolute satisfaction. Our perfect sections, made from selected white basswood, are recognized as the best on the market.
Catalog now ready for distribution. Write for copy.
SHEBOYGAN FRUIT BOX COMPANY, Sheboygan, Wisconsin

Dittmer's Foundation

Is the **Comb Foundation** made to **suit the Honey Bee.**

It's the **Comb Foundation** that helps produce the **full capacity honey crop.**

It's the **Comb Foundation** to give your **Honey Bees.**

Ask for more information; also prices and **FULL DISCOUNT** on all Bee-Supplies.

Gus Dittmer Company
Augusta, Wisconsin

PAGE-KENKEL MFG. CO.

Manufacturers
OF THE
"NONE BETTER"
BEE-KEEPERS' SUPPLIES

Perfect sections from young, white, basswood. White Pine Hives and Supers, Excellent Shipping-Cases, Brood-Frames, Separators, etc.
We invite your correspondence.

Guarantee—All goods guaranteed perfect in workmanship and material or money cheerfully refunded.

Page-Kenkel Manufacturing Co.,
New London, Wis.

FOR THE BEST **Early QUEENS**

Send me your address for Italians and Carniolans. I BEGIN mailing Queens early in March. Untested, 75 cts. each. Tested, $1.25 each. Circular free.

Grant Anderson, San Benito, Texas

PHARR WANTS YOUR ORDERS FOR QUEENS

Goldens and 3-Banded Italians

For twelve years we have asked for your orders and we have gotten all we could fill and sometimes more. But we have ever tried to serve you right, and will guarantee similar treatment in the future. Prices of Untested, $1.00; Tested, $1.50; Breeders, 3.00 to $5.00. Write for prices in large quantities.

2-frame Nuclei, queenless, $2.25
3 " " " 3.25
10 " colonies with queen 8.00
All F. O. B. Berclair.

Orders booked now—delivery last of May or June

John W. Pharr, Berclair, Texas

CARNIOLAN QUEENS

Carniolans are excellent winterers, build up rapidly in the spring, are very gentle, very prolific, cap their combs very white, enter supers readily, and keep their colonies strong at all times. Write for our **free** paper, "Superiority of the Carniolan Bee," explaining more fully, giving briefly best systems of management. Untested queens, $1.00 each; doz., $9.00. One-lb. package bees without queen, $1.50; with queen, $2.50, in June.
ALBERT G. HANN, Clinton, New Jersey
Carniolan Queen-Breeder.

MUTH-CINCINNATI

"By getting Bee Supplies in carlots and selling them on a close margin, I can name you Factory Prices right here in Cincinnati. I personally supervise all correspondence and the filling of all orders."

—FRED W. MUTH.

Muth's Ideal Bee Veil (illustrated herewith) of light weight indestructible wire and strong cambric; postpaid, 75c; with other goods, 70c.

Send for Our New Catalog

Just off the press; complete information and prices about Bee Supplies.

P. S. Ship us your Old Combs and Cappings, and let us render them for you. Our process extracts every particle of wax from the slumgum. This means money for you. Write for particulars.

THE FRED W. MUTH CO.,

"The Busy Bee Men"

204 Walnut Street, Cincinnati, Ohio

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WE MAKE IT GOOD

THE BEES MAKE IT FAMOUS

The Reputation of

DADANT'S FOUNDATION

Has been built on its merit

It is a Favorite with Beekeepers

BECAUSE

It is so well liked by the BEES

Whether it's a pound or whether it's a ton, every sheet is PERFECT.

Satisfaction Guaranteed in Every Way

DADANT & SONS,

HAMILTON, ILLINOIS.